In Two Sections Section 1

The EDISON ELECTRIC INSTITUTE BULLETIN

January 1957

DETROIT

Power for the Future: Investor-Owned or Political

E. M. Naughton

One-Spot, One-Shot Customer Service at Union Electric

John C. Faris

Personnel of Task Force on Nuclear Power

Whitwell Gives Tribute to Allies of Electric Industry

National Electrical Week Plans

230-KV, Oil-Filled Cable Installation, Huntley Station

J. M. Geiger, C. T. Nicholson

Published Monthly by Edison Electric Institute

ELECTRICAL RESEARCH STATISTICS
THE ELECTRIC LIGHT AND POWER INDUSTRY

Current Statistical Data Covering 100 Per Cent of Industry

(Includes Investor-Owned Companies, Cooperatives, and Government-Owned Utilities)

October, 1955-1956

SOURCE AND DISPOSAL OF ENERGY—MONTH OF OCTOBER

	1956	1955	%
NET GENERATION* (Kwhrs in Thousands)			
By Fuel Burning Plants	41,891,617	38,602,048	+ 8.5
By Water Power Plants	9,237,777	8,802,814	+ 4.9
Total Generation	**51,129,394**	**47,404,862**	**+ 7.9**
Add—Net Imports Over International Boundaries	472,502	187,365	....
Less—Company Use	127,944	130,514	− 2.0
Less—Energy Used by Producer	1,272,985	821,662	+54.9
Net Energy for Distribution	**50,200,967**	**46,640,051**	**+ 7.6**
Lost and Unaccounted for	5,587,498	4,753,460	− 2.5
Sales to Ultimate Customers	**44,613,469**	**41,886,591**	**+ 6.5**

CLASSIFICATION OF SALES

NUMBER OF CUSTOMERS—As of October 31			
Residential or Domestic	45,493,860	44,211,563	+ 2.9
Rural (Distinct Rural Rates)	1,690,611	1,653,594	+ 2.2
Commercial or Industrial:			
Small Light and Power	6,135,149	6,056,216	+ 1.3
Large Light and Power	298,156	290,157	+ 2.8
Other Customers	174,925	170,601	+ 2.5
Total Ultimate Customers	**53,792,701**	**52,382,131**	**+ 2.7**
KILOWATTHOUR SALES—During Month of October (Kwhrs in Thousands)			
Residential or Domestic	10,530,141	9,671,834	+ 8.9
Rural (Distinct Rural Rates)	935,604	954,077	− 1.9
Commercial or Industrial:			
Small Light and Power	7,456,777	7,026,252	+ 6.1
Large Light and Power	23,914,215	22,570,095	+ 6.0
Street and Highway Lighting	427,046	395,719	+ 7.9
Other Public Authorities	944,533	861,841	+ 9.6
Railways and Railroads:			
Street and Interurban Railways	191,997	193,532	− 0.8
Electrified Railroads	161,236	162,241	− 0.6
Interdepartmental	51,920	51,000	+ 1.8
Total to Ultimate Customers	**44,613,469**	**41,886,591**	**+ 6.5**
Revenue from Ultimate Customers (Thousands)	**$730,079**	**$684,817**	**+ 6.6**

RESIDENTIAL OR DOMESTIC SERVICE

AVERAGE CUSTOMER DATA—For 12 Months Ended October 31, 1956			
Kilowatthours per Customer	2,942	2,715	+ 8.4
Average Annual Bill	$76.49	$71.95	+ 6.3
Revenue per Kilowatthour	2.60¢	2.65¢	− 1.9

* By Courtesy of the Federal Power Commission.

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The objectives of the Edison Electric Institute are:

The advancement in the public service of the art of producing, transmitting, and distributing electricity and the promotion of scientific research in such field.

The ascertainment and making available to the members and the public of factual information, data, and statistics relating to the electric industry.

To aid its operating company members to generate and sell electric energy at the lowest possible price commensurate with safe and adequate service, giving due regard to the interests of consumer, investor, and employee.

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CONVENTIONS AND MEETINGS

1957

JANUARY

30-Feb. 1 EEI - AGA Taxation Accounting Committees, Atlanta Biltmore Hotel, Atlanta
31-Feb. 1 Missouri Valley Electric Association Industrial and Commercial Sales Conference, Hotel President, Kansas City, Mo.
31-Feb. 1 PEA Transmission and Distribution Committee, Penn Harris Hotel, Harrisburg, Pa.

FEBRUARY

4- 5 EEI Commercial Lighting Committee, St. Louis, Mo.
4- 5 EEI Dealer Coordination Committee, New Orleans, La.
4- 6 EEI Prime Movers Committee, Deschler Hilton Hotel, Columbus, Ohio
6 EEI-AGA Accounting Developments Service Committee, Sheraton Cadillac Hotel, Detroit, Mich.
6- 8 EEI Electric Space Heating and Air Conditioning Committee, St. Louis, Mo.
7- 8 EEI-AGA 1957 Accounting Conference Final Working Committee Meeting, Sheraton Cadillac Hotel, Detroit, Mich.
7- 8 EEI Dealer Coordination Committee, New Orleans, La.
7- 8 EEI Transmission and Distribution Committee, Netherland Plaza Hotel, Cincinnati, Ohio
7- 8 PEA Electrical Equipment Committee, Benjamin Franklin Hotel, Philadelphia, Pa.
11-12 EEI Electrical System and Equipment Committee, Somerset Hotel, Boston, Mass.
11-12 PEA Communications Committee, Hotel Americus, Allentown, Pa.
11-13 EEI Residential Lighting Committee, Cincinnati, Ohio
14-15 EEI Residential Promotion Committee, New York, N. Y.
14-15 EEI Commercial Electric Cooking and Water Heating Committee, Birmingham, Ala.
14-15 PEA System Planning and Systems Operation Committee, Benjamin Franklin Hotel, Philadelphia, Pa.
21-22 13th Annual Adequate Wiring Conference, Sherman Hotel, Chicago, Ill.
28-March 1 Pacific Coast Electrical Association Business Development Section, Sheraton-Palace Hotel, San Francisco, Calif.

MARCH

7 EEI Financing and Investor Relations Committee, Hotel Biltmore, New York, N. Y.
18-20 Northwest Electric Light and Power Association Business Development Section, Empress Hotel, Victoria, B. C.
21 EEI Industrial Relations Committee, Headquarters, New York, N. Y.
21-22 Pacific Coast Electrical Association Engineering and Operating Section, Hotel Statler, Los Angeles, Calif.
28-29 Oklahoma Utilities Association Annual Convention, Tulsa, Okla.

APRIL

1 EEI Industrial Power and Heating Committee, Edgewater Beach Hotel, Chicago, Ill.
1- 3 Southeastern Electric Exchange 24th Annual Conference, Boca Raton Hotel and Club, Boca Raton, Fla.

1957

1- 4 EEI Sales Conference, Edgewater Beach Hotel, Chicago, Ill.
3- 4 17th Annual Young Men's Utility Conference, Terre Haute House, Terre Haute, Ind.
3- 5 Missouri Valley Electric Association Engineering Conference, Hotel President and Municipal Auditorium, Kansas City, Mo.
8-10 EEI-AGA 1957 National Accounting Conference of Electric & Gas Utility Accountants, Sheraton Park and Shoreham Hotels, Washington, D. C.
18-19 EEI Industrial Relations Committee jointly with Personnel Sections of Indiana Electric Association and Ohio Electric Utility Institute, and Personnel Practices Committee of Pennsylvania Electric Association, Netherland Plaza Hotel, Cincinnati, Ohio
21-23 Rocky Mountain Electrical League Annual Spring Conference, Shirley Savoy Hotel, Denver, Colo.
24-25 Pacific Coast Electrical Association Administrative Services Section, Hotel La Playa, Carmel, Calif.
24-26 EEI Meter & Service Committee, Soreno Hotel, St. Petersburg, Fla.
24-26 Northwest Electric Light & Power Association Engineering & Operation Section, Sun Valley, Idaho.
28 EEI Purchasing and Store Executive Committee, Penn Sheraton Hotel, Pittsburgh, Pa.
29-May 1 EEI Purchasing and Stores Committee 10th Annual Meeting, Penn Sheraton Hotel, Pittsburgh, Pa.
29-May 1 EEI Accident Prevention Committee, Algiers Hotel, Miami Beach, Fla.

MAY

2- 3 EEI Transmission and Distribution Committee, Muehlebach Hotel, Kansas City, Mo.
5- 9 American Ceramic Society Annual Meeting, Statler Hilton Hotel, Dallas, Tex.
6- 8 EEI Prime Movers Committee, Tides Hotel, St. Petersburg, Fla.
15-17 Pacific Coast Electrical Association Annual Convention, Fairmount Hotel, San Francisco, Calif.
16 EEI Industrial Relations Committee, Headquarters, New York City
20-21 EEI Electrical System and Equipment Committee, Statler Hotel, Buffalo, N. Y.
22 EEI-AGA Accounting Division Time and Place Committee, AGA Headquarters, New York, N. Y.
24 EEI-AGA Accounting Division Orientation Meeting, EEI-AGA Headquarters, New York, N. Y.
31-June 1 EEI Financing and Investor Relations Committee, Edgewater Beach Hotel, Chicago, Ill.

JUNE

3- 5 EEI Annual Convention, Chicago, Ill.
19-21 CEA Annual Convention, Murray Bay, Quebec
23-25 Wisconsin Utilities Association Annual Convention. Accounting Section, King's Gateway Hotel, Land o' Lakes, Wisc.
23-26 Michigan Electric Association, Grand Hotel, Mackinac Island, Mich.

SEPTEMBER

9-13 Illuminating Engineering Society National Technical Conference, Biltmore Hotel, Atlanta, Ga.
19-20 EEI-AGA Organization Meeting, Leamington Hotel, Minneapolis, Minn.
23-25 EEI Industrial Relations 10th Round Table Conference, Drake Hotel, Chicago, Ill.
24-26 EEI Meter & Service Committee, Hotel Nicolett, Minneapolis, Minn.
30-Oct. 1 EEI Electrical Systems and Equipment Committee, Cosmopolitan Hotel, Denver, Colo.

The EDISON ELECTRIC INSTITUTE
BULLETIN

Power for the Future: Investor-Owned or Political

By E. M. Naughton
President and General Manager, Utah Power & Light Co.
An address before the 18th Annual Safety Meeting of Ebasco Client Companies, Chicago, Ill.

IN THE 180 years which have elapsed since the signing of the Declaration of Independence we have drifted further and further away from the simple life which was enjoyed by our forefathers. Whether we like it or not, our government has become Big Business. Faced with the problems of earning a living and providing for our families, it is becoming more and more difficult for us to keep up with what is going on in local and state government, to say nothing of the happenings in our national government.

The complexities of modern day living constantly compete for man's time. Movies, radio, newspapers, magazines and now television all are vying for man's attention, making it more and more difficult for him to understand and participate in civic, municipal or state and Federal governmental affairs. As a result, all too often our opinions are influenced more by emotional appeals than by cold and calm analysis of the issues.

I do not believe that the fundamental thinking of our people as to the proper functions of government has changed materially over the years. I do believe, however, that Big Government has become so big that it is very difficult for people to understand just what is taking place.

Let us, for example, take the role of the early day blacksmith. Perhaps he was mayor and belonged to the town council; perhaps he was a member of the school board. Issues were simple. He could understand them and decide what was best for his town, his county and his state.

For instance, he took pride in, and asked no one to help him and his community to finance the "little red school house." It was their responsibility and they accepted it. Later, some help was obtained from the state and now many are clamoring for aid from the Federal government. All this, apparently, without too much thought as to where our government—state or Federal—obtains the funds with which to finance such capital expenditures.

We have reached a point where groups of people expect government to do our nation's long-range thinking and planning. The planners usually are people far removed from local situations and their thinking is often adverse to the best interests of the citizens themselves. Some of our people not only expect government planning but they expect government to finance and construct the projects which they have planned.

Here I should like to pause long enough in the general theme to point out a circumstance that I think has a direct bearing on how we find ourselves enmeshed in so much government planning.

Peace Budget Urged

We entered this era of high annual budgets because of such emergencies as World War II and Korea. We still have need for substantial defense expenditures. Would it not be wise to devote more attention now to reducing government functions no longer necessary and to improved operating efficiency—such as has been recommended by The Hoover Commission — rather than continue to plan for more government functions and expenditures that the people would do themselves.

This procedure falls into step with the writings and statements of a young Socialist who, in 1927, said:

> "Our long-time aim is the abolition of the profit system for private use. Our strategy is to make and take every opportunity to prove that Socialism works. We must force our experts on agriculture, trusts, coal, power, subways, housing, milk, etc., to tell us correctly which the next steps are, and then take them and identify ourselves with their success."

This young Socialist was H. S. Rauschenbush who had just won the Socialist Party over to the philosophy of establishing Socialism by encroachment—a little bit at a time—rather than follow the old time doctrine of a worker's revolution to take over both the government and industry.

He published articles in the Socialist newspaper on how the Socialists were to take over the power business by such statements as:

> "We cannot hope to take over the entire $8 billion (electric) industry successfully . . . but a scattered series of great generating plants selling their power within 300-mile radiuses might be expected to have a very considerable influence upon the extension of public ownership to the transmission lines and the whole industry . . . if we don't bite off more than we can chew, we can have a good deal to chew on in the coming years."

Rauschenbush knew the practical importance of getting Socialists inside the government, if Socialism by encroachment was to get ahead. He said:

> "One good man with his eyes, ears and wits about him inside the

department . . . can do more to perfect the technique of control over industry than a hundred men outside."

It is interesting to note that Rauschenbush took his own advice. He entered the government when the New Deal came in, and, after serving two State government posts, he entered the Department of the Interior in 1939. He worked himself up to the position of Chief of Research and Planning of its Power Division at the time of his resignation in 1947. He has subsequently served out an assignment with the United Nations.

As startling as these statements may be, we have come a long way toward bringing about their objectives in the last 25 years. Today the Federal government operates more than 100 business-type enterprises. It's the largest lender and the largest borrower; the largest insurer, the largest landlord and the largest tenant, the largest holder of grazing and timberland, the largest owner of grain, the largest warehouse operator, the largest ship owner and the largest truck fleet operator. And, gentlemen, it is the largest single electric power producer in the country.

On July 1st of this (1956) year, the Federal government was operating: 78 hydroelectric installations and 13 steam plants, having a combined capacity of 18 million kw, or about 15 per cent of the total utility plant capacity of the United States. Federal power has grown from less than 1 per cent of the nation's total in 1933, prior to the birth of TVA, to 15 per cent today.

Eighty per cent of the people in the USA are served by private electric companies. The rest are served by public agencies and cooperatives.

The question of public vs. private power is the key to America's future. There are some who believe that it is the responsibility of our government to supply all electric power to certain geographic areas. If steps to counteract this belief are not taken soon Federal power will encompass the entire nation.

It all started in 1906 with the Bureau of Reclamation's first generating plant associated with water for land reclamation. That first law provided:

> Whenever a development of power is necessary for the irrigation of lands under any project undertaken . . . or an opportunity is afforded for the development of power under any such projects, the Secretary of Interior is authorized to lease . . . giving preference to municipal purposes, any surplus power or power privileges, and the money derived from such leases shall be . . . placed to the credit of the project from which such power is derived.

There are many who firmly believe that the intent of Congress in that Act was very simple; that in case a city desired to use power generated at a Bureau of Reclamation project it would have preference in the purchase of that power if its use was limited strictly to municipal purposes such as sewage pumping, culinary water pumping and street lighting.

That was a good law and effectively obeyed until about 1933 when, under the administration of that day, the Federal government launched TVA, which extended this special privilege not only to municipalities but to cooperatives originated for the purpose of distributing TVA power.

Preference in different forms was later incorporated in the Bonneville Act of 1937; in the Fort Peck Act of 1938; in the Reclamation Act of 1939; and in the Flood Control Act of 1944.

Double Preferences

In these Acts, preference is given to municipalities, public utility districts, cooperatives and like institutions provided they maintain distribution systems. Even though such agencies pay no income taxes they are given preference over other citizens in the purchase of government-generated power. This is true despite the fact that these other citizens have paid both ad valorem and income taxes and thus have paid for the very plants whose output they are forbidden to use.

Secretary of Interior Ickes in 1946 went one step further when he wrote his memorandum on power policy in which he advocated:

1st—Hydroelectric generation at all possible projects, with steam stand-by and reserve facilities "where necessary."

2nd—Integration of all government plants by transmission ties and transmission lines to all "existing and potential" wholesale markets, such lines being owned and operated by the government.

3rd—Active assistance in the organization of public agencies and cooperatives on the grounds that the Department's objectives could not be attained "by merely waiting for preferred customers to come forward and offer to purchase power."

4th—Government assistance to public agencies and cooperatives in promoting their programs and operations, and assistance in building "diversified loads and markets" for preferred customers.

For some years the preference clauses in the various Acts governing the sale of Federal power were administered in accordance with this Ickes' directive.

In 1946 preference customers took 38 per cent and privately-owned utilities 33 per cent of the saleable Federal power. In 1953 preference customers received 52 per cent, and investor-owned utilities 18 per cent of saleable Federal power.

Until recently the Federal Central Valley Project sold 95 per cent of its output to California private utilities, but from now on practically all saleable firm power will be delivered to preference customers, leaving only the secondary power available to the California investor-financed utilities.

Under this interpretation of the preference clause the Federal government became not only a producer and seller but an active promoter of public power over private power. As a result more than 80 per cent of the saleable power from Federal projects is now sold to preference customers.

One result of this discrimination is the gravitation of industry and population into areas of subsidized low power rates, that is, areas served by public power. This widens the scope of the discrimination, inhibits the growth of other areas and increases the taxes the others must pay for the benefit of the favored regions. This practice creates a "perpetual power shortage" in the subsidized areas and raises a continual demand for more and more public power facilities. In this way the growth of public power snowballs far beyond the original intent for the projects.

Under modern conditions each area competes with other areas, not only for markets but for industry as well. Certainly our nation's economy has reached the stage where avoidance of taxes and interest by favored groups should be stopped. If our economy is to grow and prosper we should strive not only for equality of opportunity, but equality in taxation. We must correct the situation soon or it will be too late.

The preference policy makes every customer of a privately-owned utility a "second-class citizen" as far as public power, which his taxes helped provide, is concerned. The company from which he buys power is denied Federal power. His neighbor across the road or in the next town served by a cooperative or a municipality, which avoid taxes, gets power for less than true cost while he, as a "second-class citizen," pays in his electric rate local, state and Federal taxes in a greater amount because his neighbor pays nothing toward these costs.

Discrimination Expands

This practice of discrimination and special privilege has produced other astonishing results. Some radical people in the Federal government have been in a position to exert pressure for the construction of government - owned transmission lines. These people used discriminatory preference as a lever to force the building of such lines, sometimes even duplicating those of investor-owned utilities.

South Dakota, a few years ago, was forced to authorize creation of public utility districts in order to obtain subsidized Federal power generated in its own state at the government Fort Randall dam. Its neighbor, Nebraska, already had politically-managed public utility districts whereas South Dakota was served by taxpaying, independent business-managed power companies. So, to keep all the Fort Randall power from going to preference groups in Nebraska, South Dakota was forced to pass a law providing for discrimination and special privilege within the state.

Few people are aware that the revised Atomic Energy Act of 1954, under which we now operate, contains an electric energy preference clause. This Act requires that preference must be given to public bodies and cooperatives in the sale of power from Federally-built atomic power plants. When one considers the probability that much of our future electric power will be produced from nuclear sources, the odious implications of the preference clause in this law are obvious. The Federal government owns and controls all fissionable material, so under the preference clause concept we soon could have complete Federal domination of the electric power field.

In the early days of the preference policy there was not so much difference between the tax burden of the privately-owned and the publicly-owned utilities. Taxes were low and were a much smaller component in the fixing of electric rates than today. Nevertheless the principle of government avoiding taxes as a factor in its own rate structure was—and still is—discriminatory and wrong.

In 1907 taxes paid by the private utilities represented 4 per cent of their revenue, whereas by 1955 taxes represented 24 per cent of their revenues. We have an entirely different tax situation than when the preference policy was initiated, and its impact on power costs and rates cannot be ignored.

In addition to the unfair and discriminatory "preference" and tax inequality in the sale of Federal power, there are other legislative and administrative policies that have further promoted public power in our country. For example: the government has undertaken to "firm" its power supply by constructing steam plants to offset the fluctuations of water power. It has introduced the "captive" clause into power contracts, requiring customers to use Federal power exclusively. It has forced private companies to transmit or "wheel" Federal power to governmental agencies by threatening to duplicate their facilities. It has encouraged the organization of local governmental bodies to enter the power business and has given financial aid to such agencies to duplicate existing equipment.

Thus do some in our government openly and brazenly renounce all pretense of conforming to our traditional system of private enterprise in the field of electric power. Such a course can lead only to complete socialization of our industry.

This is the real "give-away." It occurs not under private enterprise but under "public" power development as it has been and is practiced. What is "given away" is not natural resources but taxpayers' money. And the favored groups are not private power companies but customers of "public" power.

In the next 10 years somebody will have to spend $30 billion for electric power facilities to keep pace with increased use in the factory, store and home. Who? Government, who must get money through taxes, or private industry? The answer to that $30 billion question affects the pocketbook of all of us.

Should the Federal government do for the people what the people are ready, willing and able to do for themselves? Should the government serve all the people, or just a few?

Private industry is amply able to finance and install generating, transmission and distribution facilities as needed. Since the end of World War II, investor-owned electric companies have spent approximately $20 billion for such facilities.

Issues Face Industry

Our industry is faced with many issues. I call your attention to just two of them; namely, the Niagara Power Redevelopment and the "Crash" program for Nuclear Power Plants. The problem as to who will develop additional hydro power on the Niagara River has been going on since 1950. A bill to permit investor-owned companies to develop Niagara was passed by the House in 1953, but died in the Senate. This year a bill for a New York State Power Authority to construct and operate the Niagara project passed in the Senate but died in the House.

Niagara presents a simple and clear-cut issue as to whether business-managed, investor-owned companies, or politically - managed groups, shall construct and operate the project. It is solely a power venture. There is no flood control, no navigation, no irrigation involved in the question. The question, then, is whether the people of our country want to hamstring and stifle the independent power companies by superimposing subsidized Federal or state public power right on top of their present operation.

If we, as a people, prohibit private power from expanding and increas-

ing its electric output at a location where it has provided all the electricity the area needed for over 60 years, how can we justify the production of power by private industry anywhere in the nation?

Turning our attention for a moment to atomic energy, may I point out that the investor-owned utilities, as an industry are spending $305 million in planning, construction and research on nuclear power plants, which will have a combined capacity of over 1,000,000 kw.

In spite of these activities by private enterprise, Senator Albert Gore of Tennessee, under the guise of keeping our country ahead of Russia, introduced a Bill in the last Senate to direct the Atomic Energy Commission to build a series of large scale nuclear fuel electric power plants, three of which would develop 100,000 kw each. (Preference customers, of course, would have first call on the electric output of these plants.) The Senate passed this Bill calling for an expenditure of $400 million of our tax money to construct five nuclear fuel power plants. The House subsequently defeated the Bill. Senator Gore announced he intends to re-introduce this Bill at the next session of Congress.

Of serious interest to us in the utility business is the probability that the insidious objective of the Bill is not so much to learn more quickly about the generation of electric power from fissionable materials, but more likely to establish in effect several more TVA's across the country under the guise of improving this nation's position in atomic generated power. Senator Leverett Saltonstall of Massachusetts said:

> "The Gore Bill is a bad bill. If it ever becomes law it would put the Federal government in the power business for keeps."

There is no mistake about it, gentlemen, our industry is fighting for its life. The most active and outspoken planners leave no doubt about that. Their aim is a complete nationalization of the private electric utility industry, which could be followed by socialization of all business and industry. We must go before the court of public opinion and show the people that 80 per cent of them already are victims of discrimination. Either the private utility industry stays free, or one by one the lights of free enterprise will be extinguished.

The question now arises about what to do in this kind of a situation. Americans basically like fair play. They don't like to see the cards stacked. And yet that is what has happened in this game of preference. That's what happens every time the Federal government gets into the electric power business.

Suggestions on Policy

Here are some of the things that we can speak and work for to promote a Federal Power Policy that will point the way to private power for the future:

1. No Federal agency should finance projects whose primary purpose is to sell power. Permit private companies which are ready, willing and able to make and sell electricity under government regulations. Why should we have Federal electricity any more than Federal medicine, steel, automobiles and farms?

2. Development of hydro power at a Federal dam should be left to local agencies. So, when the Federal government builds a dam with power possibilities, it should offer to license local agencies to install and operate electric facilities to serve local areas.

3. Local agencies can handle the transmission of power from government dams to consumer. They should have a chance to do so. The government also should allow local agencies to build and operate power lines from the dams on terms fair and reasonable to all concerned.

4. The preference clause should be eliminated from Federal laws. Let's abolish discrimination. We should not favor certain distributing agencies over others in government contracts. The government should sell power on equal terms to all local power distributors.

5. The power phases of Federal projects should pay for themselves. Power from all government projects should be sold at rates which take into consideration all of the items of cost, including taxes and interest. This is good business. A uniform system of allocation should be set up and used so that revenues from the sale of Federal power would cover: a) All expenses — operating, maintenance, production and marketing; b) Adequate interest rates on investment; c) Recovery of investment over a reasonable period; d) Taxes comparable to those which private power projects have to pay; e) Prices for power charged should be fair.

6. And, finally, all Federal power projects should report annually to Congress, using a uniform system of accounting.

It is just as true today as it was a century and a half ago, that the condition under which God has given liberty to men is eternal vigilance. Whether the demogogues advocating public power are or are not Socialists is not important. What is important is that the price we pay for public power must also be measured by the advance of Socialism in our midst and our loss of liberty.

The companies that we represent are accepting the responsibility of bringing to the attention of our shareholders, our employees, our customers and the public generally—the constant endeavor of the few to socialize the power business.

We all have a duty to present these problems, to our friends and neighbors to the best of our ability. This we must do more vigorously in the future. With your help we can preserve and hand down intact to future generations of Americans the cherished rights we have inherited from those who were willing to speak, to fight, to die if necessary, whenever a free society and a free people needed defenders.

Woodpecker Bait

DAMAGE by woodpeckers to poles of Public Service Co. of Oklahoma has been lessened by the practice of bolting a section of an old pole to a newly erected one. The birds chew happily on the old section—sometimes.

Apparently the woodpeckers leave the old pole alone when it is left standing in its old position or when it is placed at some distance from the new pole. But bolting the old pole to the new one carries the 60-cps hum to the old pole, and attracts the birds.

When the company finds a pecked pole that is still in good condition, the hole is filled with a compound to delimit further damage from rot.

One-Spot, One-Shot Customer Service at Union Electric in St. Louis

By John C. Faris

Manager, Customer Business Department, Union Electric Co., St. Louis

Prepared for the Executive Committee of the Accounting Division of Edison Electric Institute at its meeting in St. Louis, Mo., Nov. 1-2, 1956

CUSTOMERS are the greatest assets of any utility. Through their bills they pay the dividends and interest due the investors in the business, taxes to local, state and Federal governments, and all operating costs including the salaries of all employees of the company. "Satisfied" is a relative term, but the more satisfied people are with the service, policies, and personnel of a utility, the more likely they are to buy more of its service and thereby contribute to its continued growth.

Customer attitude is largely determined by the impressions made through various media. A well-organized public relations program creates a general atmosphere of good will through advertising by television, radio, newspapers and billboards, by participation in community and civic activities, and through many other channels. Direct contact with any employee or representative of the company, however, is most important in individual cases because it is a matter of one person dealing with another.

Realizing this importance, for over ten years Union Electric has had a continuous program of customer relations training for all of its contact employees. Its general theme has always been to impress upon each contact employee, when dealing with a customer, that "YOU ARE UNION ELECTRIC!" After all, the company is a corporate entity—an inanimate thing—that you cannot see or talk to.

Customer contacts may be divided into two general categories. There are those where we go to the customer, as in practically all of our sales counselling, cooking demonstrations, etc., and when we call to read meters, or when we restore service. The other type is when customers come to us to pay their bills, to make some order or request, with an inquiry or—in a very minor number of cases—with a complaint. Whether or not we dispose of these transactions in a prompt, courteous and efficient manner has the greatest bearing on whether or not the individual customer is "satisfied."

The greatest volume of customer business transactions are received by telephone, particularly in metropolitan areas. Streetcar and bus fares have increased in most cities; if people drive their own cars, parking space is usually at a premium. The same considerations apply in suburban areas, making it highly unprofitable for a utility to operate branch offices. In this day and age of high telephone saturation, an electric utility customer can do practically anything by telephone except pay his bill.

A two-year study of customer service operations of various larger utilities made by Union Electric staff engineers, under specific authorization of our top management, was completed near the end of World War II. The two basic recommendations lead-

Full-length view of Union Electric's Service Location Tub File is shown.

ing to our present "One-Spot, One-Shot" customer service operations were: (a) separating incoming customer calls from all other business calls at the point of initial impact; and (b) centralizing all possible functions required to dispose of incoming customer calls. The common objective was—and is—"to make it easier and more pleasant for people to do business with Union Electric."

Dual-Purpose Telephone Switchboard

It is axiomatic that most people are extremely impatient where telephone service is concerned. People cannot judge time—actual tests show that most persons think that 25 seconds is a full minute, two minutes seem like five, and five minutes seem like a quarter-hour. The telephone company's standard, to avoid customer irritation, is 20 seconds from the time a call is received until it is dispatched and answered.

Formerly, all customer calls were received at the Union Electric main switchboard, along with all other types of regular business calls to various company offices. Besides the great volume of calls handled daily for general business purposes and dispatched to several hundred stations throughout the company offices and plants, the main switchboard operators also had to identify and screen all of the various kinds of incoming calls from customers. The operators not only were required to know from memory what company personnel could be reached at each telephone station, but they also had the task of finding out just what each customer wanted to know so those calls could be placed accurately.

There were several different locations in various offices to which customer calls were then directed. Service applications and disconnect orders were taken at a telephone center in the sales department. Emergency "light out" calls were taken by the trouble dispatchers. Inquiries concerning bills or accounts were taken at a "turret board" in the adjustment division. Inquiries about the status of pending orders and line extensions were handled in the distribution department, while other inquiries were dispatched to still other locations.

When unusual peaks in telephone traffic occurred, it became a very strenuous task for the main PBX operators to rapidly connect all incoming general business calls to various company personnel at the proper stations, along with sorting out the many types of customer calls and connecting them to the appropriate location for efficient disposal. Even the most experienced operators occasionally misdirected some calls under these circumstances, resulting in callbacks and delays which proved irritating to the customer. The difficulties encountered in such an operation become apparent only when subjected to intensive study.

In June, 1948, we installed an entirely separate "Customers' Switchboard," with 27 incoming trunks. Our listing in the metropolitan telephone directory was changed so that the customers themselves screened their own calls between the new "Customers' Switchboard" and the original Main PBX, as follows:

Union Electric
Customer's service
Emergency or light out calls
To order service on or off
Inquiries—service connections
Bill or account information
Credit or collections
All customers call ..MAin 1-0711
General offices 315 N 12
Calls for individuals & departments
Securities department..MAin 1-3222
Service Building 721 S 18
Calls for individuals & departments .....MAin 1-3222

This wording in the directory makes it easy for people to call the proper number. Vendors, banks, industrial engineers, contractors, representatives of business concerns and the many people who call various departments of the company, usually know the general office number. However, most customers have to look up the number in the telephone directory, hence the informative listing above immediately following the company name.

Since there will inevitably be a certain proportion of calls to the wrong switchboard, the two separate boards were connected together by 10 tie-lines. Also, since the "Customer Switchboard" operates only from 8:00 a.m. to 4:30 p.m., Mondays through Fridays, the two boards were "patched" together and operated as a single communications center after hours and on weekends.

This operation was continued for several years, with the main PBX located in the general office building downtown, and the customer switchboard located in the telephone business office at our new Service Building about a mile distant. Early in 1956, coincidental with moving several additional departments to the Service Building from the Main Office, a nine-position dual purpose switchboard was installed in the telephone business office.

This switchboard is of an improved design, known by the telephone company as Type 607-A. It is lower—desk height—affording the operators more comfortable seating. It is much more compact, since each operator can easily reach seven panels from one position, instead of four on the old boards.

The new switchboard continues to have 28 incoming trunk lines to the general number (MAin 1-3222), manned at four positions at one end. The other end is wired to replace the former "Customer Switchboard," with its 27 incoming trunks and four positions. The ninth position is in the middle, and it can be manned by an operator to handle either incoming general business or customer calls, or both. During daytime business hours the entire switchboard is normally manned by eight operators.

All operators are trained to work at either end of the board, and are periodically rotated to afford greater flexibility in assignments to working personnel on duty. However, the two groups of operators are specialists whenever working at either end of the board. Thus, we continue to accomplish, with improved equipment, our original objective, i.e.: incoming regular business calls are promptly connected to the proper individual station, without interference of customer calls which might cause delays; Incoming customer calls are given special attention (sometimes involving several questions to find out just what the customer wants) and then placed so the order, request, inquiry or complaint may be answered at the first contact.

The MAin 1-3222 end of the board continues to receive and dispatch about 1,000,000 calls per year to 890 individual stations in various company offices, power plants, and works headquarters, as well as serving microwave connections to certain

Operators receive calls at Union Electric's nine-position, dual-purpose switchboard.

power plants. The MAin 1-0711 end of the board continues to receive and dispatch about 450,000 of all types of customer calls to some 56 individual stations and other telephone centers as described herein.

The entire switchboard is located inside a partition within the telephone business office proper. The "customer" end, however, is enclosed with clear glass panels so those operators can at all times observe the staff available within the room to accept customer calls. The "regular business" end of the board is located immediately adjacent to the trouble dispatching office, this proximity being particularly important at nights and on weekends when, normally, there is only one operator on duty to take emergency trouble or light-out calls.

Union Electric serves some 433,000 customers in the St. Louis division, in the city proper and suburban St. Louis County over an area of 558 sq. mi. The operators of the "customer" end of our switchboard receive and dispatch approximately 450,000 calls annually, which is an average of more than one call for every customer per year.

Centralization of Functions

The second key feature of our effort to render "one-spot, one shot" service was to centralize all appropriate customer service personnel in a single room—the telephone business office. First established in 1945, with numerous improvements and added functional operations since then, the people in this one office have consistently handled from 85 per cent to 90 per cent of all incoming customer calls *at the first contact.*

To explain the exceptions first, the other 10 per cent to 15 per cent require the attention of specialists and are dispatched to appropriate groups in other departments. Inquiries from customers regarding the status of line extensions or service installations are directed to a telephone center in the distribution department, where files are maintained to provide quick answers on the progress of every job, until completion. Household customers interested in appliance demonstrations, cooking schools, better lighting, and related matters are dispatched through a subswitchboard in the residential sales department. Commercial customers with rate, engineering or other such technical inquiries are directed to the commercial sales department.

All customer service personnel are, of course, given basic training in customer relations from the time they hold their first job in the department. Special training is given as these people progress through various other jobs in the line of promotion, where they also gain experience in other phases of work which affect customers directly or indirectly. Repeated training sessions are given from time to time after they are assigned to the telephone business office, particularly whenever new problems arise or when changes in procedures are put into effect. An important training aid is the departmental "monitor board" interconnected with all customer service telephones on which, as a matter of standard practice, employees are encouraged to listen in on conversations with customers by their coworkers, to learn thereby.

The operating personnel of this office comprises two principal categories, according to primary functions.

Adjusters—A group of senior employees with extensive previous experience in various phases of customer contact work. This group handles all types of inquiries about bills and accounts, in-

cluding the most complicated cases such as high bills, as well as most inquiries relating to collection of delinquent accounts.

Each "adjuster" is seated at a small individual desk, equipped with a "hold" key on his telephone. Account information is obtained by telephone from customer accounting, meter reading, or elsewhere as appropriate, while the customer waits. We endeavor to complete every transaction by this one telephone conversation.

Telephone Service Clerks—A group of junior employees who handle turn-on and turn-off orders, changes in load and new business orders, service inquiries, and emergency trouble or light-out calls.

These clerks work at the service location card file (described later), and they also post mail orders and do the entry work necessary after orders requiring field work have been executed.

Following are explanations of the respective operations of these two groups, the volume of transactions, and descriptions of the major types of customer business. Even though every customer may be influenced by various sales or advertising approaches which enhance his opinion of Union Electric, we are convinced that each occasion when he comes to us with a question or a problem is an opportunity to create a lasting impression—good, bad or indifferent. Only by constantly striving for the objective of serving each individual customer (a) promptly, (b) courteously, and (c) efficiently, can we hope to gain and maintain the goodwill of our customers.

Bill and Account Inquiries

The customer service men assigned to this work must have a thorough knowledge of meter reading schedules, billing operations, rates, credit policies, and collection procedures as well as a working knowledge of company policies and procedures in general. Whatever his previous experience, a man promoted to the job of adjuster or the equivalent is given intensive indoctrination before he is permitted to handle a customer on his own.

The normal full-time staff on this work consists of 11 adjusters and one leader. Since the Monday traffic volume is often 40 per cent or more higher than the other week-days, our six outside adjusters usually assist each Monday as well as on other days as required during peaks, deferring their field calls on customers with more difficult high bill complaints. Vacation season and Monday relief is also afforded by our six customer survey interviewers, as the traffic volume requires.

The total volume of customer business transactions handled by this group has averaged about 110,000 per year for the past three years.

During peak hours on peak days we screen out routine credit or collection inquiries at the switchboard, dispatching them directly to the credit division for handling when all the adjusters are busy—an average of over 30,000 calls a year. Thus our more involved type of customer inquiries total around 140,000 per year, an average of 320 per 1,000 customers in the St. Louis division.

This is a closeup of the Service Location Tub File.

The major categories of transactions, and the respective volume of each, are: High Bill Inquiries—15,000; Delinquent Account Inquiries—49,000; Surety Deposits—9,000; Explain Bill—47,000; Service Orders and Inquiries—8,000; Miscellaneous Transactions—12,000.

Service Orders, Service Inquiries, and Trouble Calls

Another distinct improvement has been accomplished in the method of handling applications for service from customers moving into vacated premises or new homes, and disconnection orders from people who are moving out and request a final bill for services used. Under the old method, application clerks at a separate telephone center in the sales department would ask the customer a series of questions, and fill in the answers on a blank form. Each order was then forwarded to the distribution department and checked against a service location record, then sent into the field for execution.

Many errors occurred under this method. For example, customers frequently gave the wrong address—sometimes upstairs instead of downstairs, or around the corner, or even across the street. Our experience has been that people are notoriously inaccurate about such details; but it is highly important that the account be opened at the correct location to avoid subsequent meter reading and billing errors particularly in duplex residences and apartment buildings. Furthermore, costs were higher because the field men made several trips, in some cases, to correctly identify the premises actually to be occupied or vacated by a particular customer.

All such incoming service applications are now checked by telephone service clerks against a "service location card" in the telephone business office, and the address and floor location is verified while the customer is on the telephone. This frequently involves further questioning of the customer. At the same time we are careful to obtain the correct spelling of the customer's name. Furthermore, we can inform the customer of any specific circumstances, as when an electric range or water heater installation is involved. We can also explain to the customer if a re-inspection is required by municipal authorities.

This improvement has not only saved the company time and money, but has eliminated thousands of callbacks and follow-up contacts with the customer. In other words, we complete the whole transaction the first time the customer calls—again "One-Spot, One-Shot" service.

The normal full-time staff on this work consists of 16 telephone clerks working at the files, backed up by three order clerks who handle mail

orders, sort and distribute orders for posting or for forwarding to other departments for execution, and one junior steno who types new cards for the file. These 20 people are directed by one leader, while their training is conducted by one assistant supervisor.

The annual volume of transactions handled at the service location file totals 310,000 a year—238,000 of which are customer calls—and is the equivalent of 720 transactions per 1,000 customers.

Service Location Record File

Every utility has a record of the characteristics of each customer service connection somewhere in its records, at one location or another—meter sheets, billing records, plat maps, or on separate cards.

Our studies having convinced us of the advantages of checking each successor or new business order at the initial contact, we adopted and modernized an existing 4"x6" vertical card file formerly kept in the distribution engineering department. This file has since been expanded to include about 500,000 cards for the 435,000 customers in the St. Louis Division. (The difference being premises served with multiple meters, and a minor proportion of inactive meters.)

Quick access is of prime importance in handling each order—particularly during peaks of customer telephone traffic. After extensive investigation of various types of "visual index" files and possible punchcard adaptation, and making detailed time and motion studies of different applications, we finally decided on a vertical card file in street name and address order.

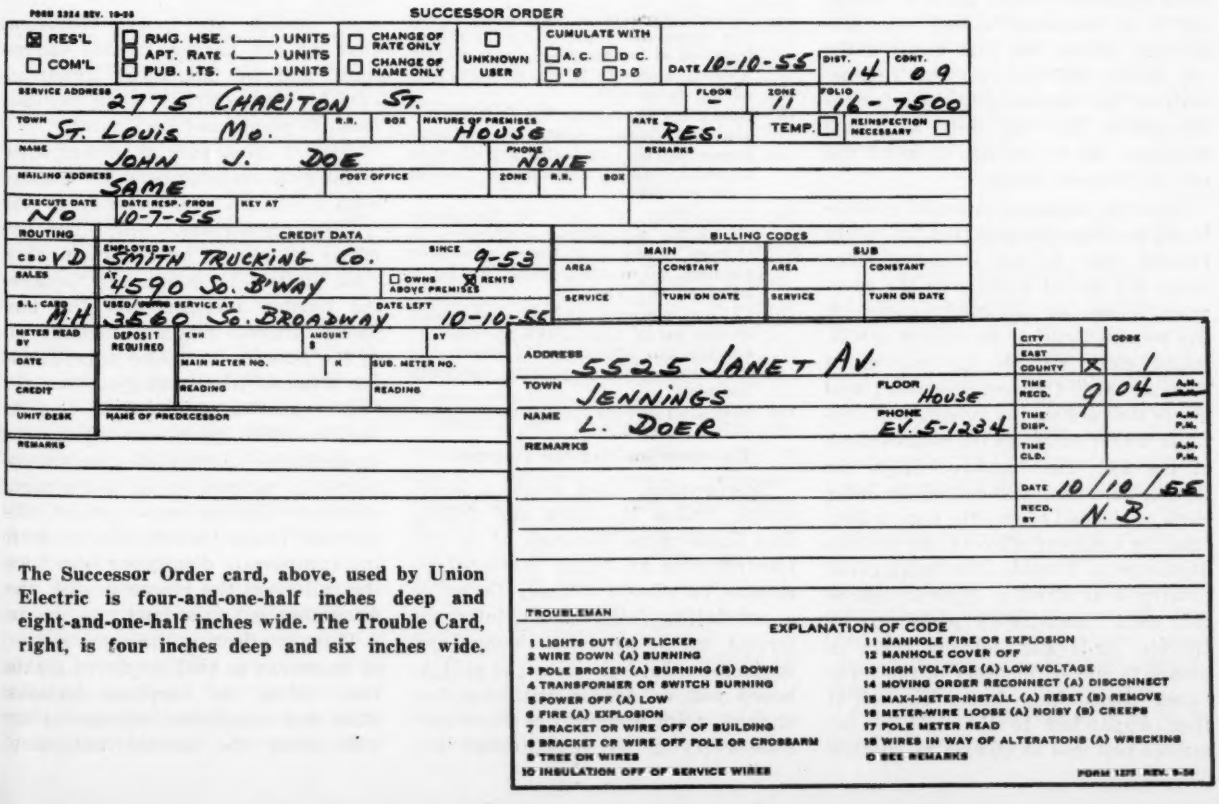
This new file is custom-built, and was first installed in June 1952. It is 58 feet in length and is of duplex design, i.e., two rows facing each other, with a continually moving belt conveyor down the middle which carries all orders and cards to an end desk for sorting and routing or dispatching.

The cards are filed in a series of trays holding about 2,500 cards each. There is an index tab for each 100 cards, to provide "ready finding." Capacity of the present file provides for growth up to 600,000 cards.

The original cost of this file was very nominal, as are its operating and maintenance costs. We are quite confident that we handle more customer orders and requests per year per employee—and in a simpler, faster manner—than any other installation of comparable size that we have observed.

The file is built low enough so that the clerks work seated in comfortable chairs, with moveable writing boards which roll back and forth above the cards and provide easy access thereto. Each telephone clerk wears a head-set, to free both hands for file reference and writing. Under present operations each girl is reasonably accessible to about 30,000 cards; but since the card file was designed with recessed supports it is easy for the employees to slide sideways along the file from her position to reach twice as many cards—an important feature when some of the clerks are absent from their stations during lunch hours and relief periods, on vacation or sick leave.

The cards in this file are indexed alphabetically according to street names and the street numbers. Therefore, when a customer calls and says "I want my electric turned on," our switchboard operator asks the address to which he is moving and the



SUCCESSOR ORDER

RES'L ☒ COM'L ☐ | RMG. HSE. (____) UNITS ☐ APT. RATE (____) UNITS ☐ PUB. I.TS. (____) UNITS ☐ | CHANGE OF RATE ONLY ☐ CHANGE OF NAME ONLY ☐ | UNKNOWN USER ☐ | CUMULATE WITH ☐ A. C. ☐ D. C. ☐ 1 Ø ☐ 3 Ø | DATE 10-10-55 | DIST. 14 | CONT. 09

SERVICE ADDRESS 2775 CHARITON ST. | FLOOR — | ZONE 11 | FOLIO 16-7500

TOWN St. Louis Mo. | R.R. | BOX | NATURE OF PREMISES HOUSE | RATE RES. | TEMP. ☐ | REINSPECTION NECESSARY ☐

NAME JOHN J. DOE | PHONE NONE | REMARKS

MAILING ADDRESS SAME | POST OFFICE | ZONE | R.R. | BOX

EXECUTE DATE NO | DATE RESP. FROM 10-7-55 | KEY AT

ROUTING | CREDIT DATA | BILLING CODES

CBD VD | EMPLOYED BY SMITH TRUCKING CO. SINCE 9-53

SALES | AT 4590 So. B'WAY ☐ OWNS ABOVE PREMISES ☒ RENTS

S.L. CARD M.H | USED/WORK SERVICE AT 3560 So. BROADWAY | DATE LEFT 10-10-55

MAIN		SUB	
AREA	CONSTANT	AREA	CONSTANT
SERVICE	TURN ON DATE	SERVICE	TURN ON DATE

METER READ BY | DEPOSIT REQUIRED | KWH | AMOUNT $ | BY

DATE | MAIN METER NO. | K | SUB. METER NO.

CREDIT | READING | READING

UNIT DESK | NAME OF PREDECESSOR

REMARKS

ADDRESS 5525 JANET AV. | CITY | EAST | COUNTY X | CODE 1

TOWN JENNINGS | FLOOR HOUSE | TIME RECD. 9 04 A.M.

NAME L. DOER | PHONE EV. 5-1234 | TIME DISP. A.M. P.M.

REMARKS | TIME CLD. A.M. P.M.

DATE 10/10/55

RECD. BY N. B.

TROUBLEMAN

EXPLANATION OF CODE

1 LIGHTS OUT (A) FLICKER
2 WIRE DOWN (A) BURNING
3 POLE BROKEN (A) BURNING (B) DOWN
4 TRANSFORMER OR SWITCH BURNING
5 POWER OFF (A) LOW
6 FIRE (A) EXPLOSION
7 BRACKET OR WIRE OFF OF BUILDING
8 BRACKET OR WIRE OFF POLE OR CROSSARM
9 TREE ON WIRES
10 INSULATION OFF OF SERVICE WIRES
11 MANHOLE FIRE OR EXPLOSION
12 MANHOLE COVER OFF
13 HIGH VOLTAGE (A) LOW VOLTAGE
14 MOVING ORDER RECONNECT (A) DISCONNECT
15 MAX-I-METER-INSTALL (A) RESET (B) REMOVE
16 METER-WIRE LOOSE (A) NOISY (B) CREEPS
17 POLE METER READ
18 WIRES IN WAY OF ALTERATIONS (A) WRECKING
D SEE REMARKS

FORM 1275 REV. 9-56

The Successor Order card, above, used by Union Electric is four-and-one-half inches deep and eight-and-one-half inches wide. The Trouble Card, right, is four inches deep and six inches wide.

customer says "4852 Delmar," she places the call to the "D" station at the alphabetical file. The telephone clerk takes the call, writes the service address on an order form, pulls the corresponding location card and verifies the service address, completes the order form including credit information and various other necessary data, enters the meter number and account number so the order will be correctly identified in all subsequent processes, and then records the transaction by posting the new customer's name to the location card, with the date of the order.

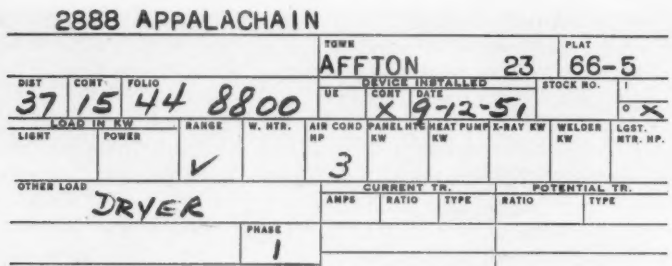
Our six years of experimentation and study is a long story, but the results of four years of actual operation of our ultimate design has, we think, justified the wisdom of management in approving this method of rendering "one-spot, one-shot" service to a great volume of customer transactions.

Trouble or 'Light Out' Calls

The centralization of functions in 1945 included, as previously stated, the taking of trouble calls from customers in the telephone business office instead of by the trouble dispatchers themselves.

Under the old method the main PBX operators would place a trouble call to a dispatcher's desk; the dispatcher taking the call would make out a card with the customer's name, address, the nature of the service interruption, and the date and time received. He would then dispatch the call by two-way radio.

Since the separate customer switchboard has been in operation, incoming trouble calls during week-day office hours are placed directly by the operators to any of the stations open at the service location file, where a telephone clerk records the call on a "trouble card" (See cut this page), and places the card on the moving belt conveyor which traverses the entire length of the file. The conveyor drops the trouble card on a desk before an order clerk at the end of the file, near a door into the adjacent office of the trouble dispatchers. Trouble calls being given priority over all other types of orders, this clerk immediately picks up the trouble cards and delivers them in person to one or the other of the three "area" dispatching desks. The call is then dispatched to the field to get service restored as quickly as possible



Service location cards, 5 13/16 inches deep and four inches wide, are on two stocks —white for residential, yellow for commercial.

usually within minutes from the time the customer phones in. (It is not unusual for a customer to comment that "the troubleman must have been waiting around the corner, because he rang my doorbell right after I hung up!")

There are several distinct advantages under the present method, including:

(a) Expediting service by freeing trouble dispatchers for their principal function of ordering service restored. Nobody can effectively do two jobs at the same time.
(b) Operating economies by shifting operations from dispatchers to telephone clerks, particularly with continued increase in volume of trouble calls received.
(c) Availability of time to telephone clerks for persuading customers to change their own fuses wherever possible, eliminating necessity for a troubleman's visit.
(d) Calls to customer switchboard avoids swamping of main PBX in times of emergency, which would block out incoming calls on general company business.
(e) Improved service during emergencies.

Emergencies—Service Outages

Emergencies occur when a windstorm strikes the area and falling tree limbs cause hundreds of service interruptions at widely scattered locations, or when a primary feeder or a substation failure may interrupt service to thousands of homes and businesses. In such cases the switchboard will be flooded within a few minutes, with hundreds of other customers trying to get through but getting nothing but a busy signal.

Whenever such an emergency occurs during regular office hours, trouble calls are given precedence over all other types of customer business. All adjusters and order clerks on duty assist the telephone clerks, manning stations to cover all 27 incoming trunk lines to the "customer" end of the switchboard. (Customers calling on normal business during such periods are quickly informed that we are having trouble on our lines, and we find them almost invariably cooperative when we ask them to please call back later.)

Special cases, such as broken wires or burning transformers, are marked with a red "X" for priority by the trouble dispatchers. Since the two offices are located next to each other, close liaison is maintained between the trouble foremen and the telephone business office, particularly as to the reasons for major outages and the progress in restoring service.

Emergencies After Hours: After regular office hours—at nights and on weekends—the combination switchboard is manned by a single night operator. During these periods, this operator places trouble calls direct to the appropriate dispatcher who takes the call from the customer and then dispatches it to the field.

This, in effect, is the same method of operation as that employed all the time before the telephone business office was established. It works very well when the normal volume of

trouble calls are received from customers with blown fuses or occasional transformer burn-outs. A real emergency occurs when a windstorm sweeps across the area, or a sub-station or a feeder failure is experienced and only the skeleton crew is on duty.

A standing arrangement exists whereby the trouble dispatchers call a supervisor of the telephone business office anytime at night or on weekends. The telephone business office personnel are called at their homes and asked to report immediately to the office. Usually, four or five or six men will be on hand within an hour, to take trouble calls from the operator and deliver them to the dispatchers. In extreme cases an even larger staff is recruited; but we have found that six men can usually record and deliver to the trouble dispatchers more calls than all the regular and emergency crews can handle in the field until the peak levels off.

Answering Device: There still remains the problem, however, of a hiatus that exists when a storm hits at night or on a Saturday or Sunday, between the time the calls first begin to come into the switchboard, and when telephone business office personnel are able to report for duty. During this period of some 45 minutes to an hour and a quarter, the skeleton crew on duty is hopelessly swamped.

In September, 1956, we attached a device to the switchboard, intended to give some measure of satisfaction to as many as possible of the hundreds of callers who otherwise would get only a busy signal. This is the telephone company's "Model 2-A Automatic Answering Device," on which the recorded message can be changed at will.

It has a capacity of 20 lines, and operates on a cycle of 30 seconds or less. This means that the night or weekend operator can switch 20 incoming trunks into the device, and if the message takes only 20 seconds, it will reply to 60 customers per minute. Meanwhile, the operator has seven remaining trunks open, to accept calls for the dispatchers.

It will be several months before we can determine the acceptability of this device, although three or four other electric utilities are using it in differing degrees. We believe a recorded answer, during emergency peaks, is better than a busy signal.

As might be imagined, the entire operation and organization of our customer service division has been subjected to critical review from time to time by top management officials as well as by the staff engineers who made the original study. There have been periods when we fell far short of our objective because we had more customer traffic than the existing staff could possibly handle. Really "good" customer service becomes a question of economics—always most important in the utility business. We hire enough people to do a top-notch job most of the time, but during some periods of abnormal traffic you just do the best you can because you can't afford to have people just sitting around the rest of the time.

IBM billing replacing the ledger card system naturally added some complexities to our work. The progression toward electronic accounting for customers' bills is going to create other problems, particularly in the area of ready access to account information. If you will agree that our customers are our most important asset, then you must realize that when somebody calls up and says "How come my electric bill is higher than it was last month?" he doesn't care whether we keep books on a magnetic drum or the back of an old envelope—he wants an answer, and quick, too! Then it behooves those of us who are responsible for the planning of future automation to remember that we may mechanize routines to the nth degree, but we cannot mechanize people—our customers!

Recent EEI Publications

EEI Pocketbook of Electric Industry Statistics

EEI Pub. No. 56-5. Statistics covering selected years in the interval 1902 to date, national in scope, compiled from authoritative sources including Edison Electric Institute publications and studies, Federal Commission reports and other government documents. 44 pages. Price 35 cents to members.

Only the more significant figures have been included in this pocketbook. Arrangement of the material has been made with an eye to quick comprehension. More detailed statistics are available in the Annual Statistical Bulletin of the Edison Electric Institute. ($1.00 per copy.)

Cable Operation, 1954

EEI Pub. No. 56-8. A Joint Report on Power Distribution, Association of Edison Illuminating Companies, and Transmission and Distribution Committee, Edison Electric Institute. 20 pages. Price: 75 cents to members and their employees, $1.75 to non-members in USA; $1.85 to foreign countries.

This report covers operating experience with high-voltage (above 7.5 kv between phases) paper-insulated cable, joints, and terminations during 1954 as reported by 16 contributors who operate more than 17,919 miles of cable.

Competitive Power

EEI Power Sales Manual, Chapter 16. Prepared by Industrial Power and Heating Group, Commercial Division, Edison Electric Institute. 48 pages. Price: $1.00

Information relative to changing economic conditions, new processes, new equipment, fuel costs, labor costs, capital costs, and the many other factors which have a bearing on the economics of generated vs. purchased power are set forth in this manual. In addition to a section devoted to a general discussion of competitive power, sections are included also on items to be considered in evaluating isolated plant vs. purchased service, necessary sales knowledge, diesel engines, spark-ignition engines, combustion gas turbines and steam engines and turbines.

EEI Catalogue Lists Lighting Sales Aids

ILLUSTRATIONS and information on selling tools to help electric utilities in selling the commercial lighting market are included in a new "Catalogue of Lighting Demonstration and Exhibit Materials" just prepared by the Commercial Lighting Committee of Edison Electric Institute.

Selected props and other materials available in the industry for use in group lighting demonstrations and exhibits are shown, each with illustration and text, giving a description of the kit and its method of application.

Price of the catalogue is $1.00 to member companies.

Personnel of Task Force on Nuclear Power

Donald S. Kennedy, President of the Edison Electric Institute, has released the following statement by James F. Fairman, Chairman of the EEI Technical Appraisal Task Force on Nuclear Power.

Five outstanding scientists and engineers have been appointed to and have been serving on the Task Force. They are:

ROBERT F. BACHER. director, Norman Bridge Laboratory, California Institute of Technology.

MARION W. BOYER, director, Standard Oil Co. (New Jersey).

AUGUSTUS B. KINZEL, vice president-research, Union Carbide & Carbon Corp.

HENRY D. SMYTH, chairman, Board of Scientific Engineering Research, Princeton University.

HARRY A. WINNE, retired vice president-engineering, General Electric Co.

Previously announced members of the Task Force are:

JAMES B. BLACK, board chairman, Pacific Gas and Electric Co.

WALKER L. CISLER, president, The Detroit Edison Co.

JAMES F. FAIRMAN, vice president, Consolidated Edison Co. of New York, Inc.

HERBERT J. SCHOLZ, board chairman, Southern Services, Inc.

PHILIP SPORN, president, American Gas and Electric Co.

WILLIAM WEBSTER, executive vice president, New England Electric System.

The Task Force, organized last September, has the following purposes:

1. To review continuously the progress of research and development, in the United States and elsewhere, of importance to the achievement of competitive nuclear power.

2. To study and report on all power reactor programs and projects.

3. To study and appraise the technical and economic factors and the results to be achieved by the design and construction at different times of prototype or full-scale nuclear power plants.

4. To act as a liaison group with the members of any nuclear reactor evaluation group that may be set up on a national level.

"The findings of the Task Force will be presented to the Board of Directors of the Edison Electric Institute, to whom the Task Force reports, and will be available to all who are interested in the development of nuclear power" Mr. Fairman said.

Dr. Robert F. Bacher

Dr. Bacher, a native of Loudonville, Ohio, received his college education at the University of Michigan. He was a member of the faculty of Cornell University from 1935-49 and was a member of the staff of the Radiation Laboratory of Massachusetts Institute of Technology from 1940-45. Dr. Bacher headed the Experimental Physics Division of the Los Alamos Laboratory in 1943-44, working on the atomic bomb project. In 1946 he was awarded the President's Medal for Merit for his work during World War II. From 1946-49 he was a Commissioner of the AEC. Since 1949 Dr. Bacher has been Professor of Physics and Director of the Norman Bridge Laboratory at the California Institute of Technology.

Mr. Marion W. Boyer

Born in Muncie, Indiana, Mr. Boyer was educated at Georgia Institute of Technology and Massachusetts Institute of Technology. He was an instructor of science and mathematics at the Daleville, Ind. high school from 1921-22. He joined Standard Oil Co. of La. in 1927. He was named vice president and director of Standard Oil Co. of La. in 1936. When the company name was changed to Esso Standard Oil Co., he continued as vice president and director. In 1950 he resigned from the company and was named general manager of the Atomic Energy Commission, which position he held from 1950-53. He returned to the Esso Standard Oil Co. in 1953 as vice president and director. In 1954 Mr. Boyer was named a director of Standard Oil Co. (N.J.).

Dr. Augustus B. Kinzel

Dr. Kinzel, born in New York City, received his education at Columbia University, Massachusetts Institute of Technology, and in France at the University of Nancy. He joined Union Carbide and Carbon Research Laboratories, Inc. in 1926 and was chief metallurgist from 1931-45, vice president from 1945-48 and has been president since 1948. He also was vice president of Electro-Metallurgical Co. from 1944-54 and was named vice president in charge of research at Union Carbide and Carbon Corp. in 1955. He has been chief consultant in metallurgy to the AEC's Los Alamos Laboratory since 1943, is past chairman and presently a member of the Naval Research Advisory Committee, member of the Corporation of MIT and president-elect of the American Institute of Mining, Metallurgical and Petroleum Engineers.

Dr. Henry D. Smyth

Born in Clinton, New York, Dr. Smyth was educated at Princeton University and Cambridge University in England. First appointed to the faculty at Princeton in 1924, he became a full professor in 1936. He was chairman of the department of physics from 1935-50. From 1940-45 he was consultant on war research projects to the Office of Scientific Research and Development. As consultant to the Manhattan District project he wrote the official report on the war-time development of the atomic bomb. From 1949 until October 1954 he was a member of the U. S. Atomic Energy Commission. He is now chairman of the Board of Scientific Engineering Research at Princeton University.

Dr. Harry A. Winne

Dr. Winne, born in Cherry Valley, New York, was educated at Syracuse University. He joined General Electric in 1910 as a student engineer. He served in various capacities, including assistant foreman of the testing department, section head of the industrial engineering department, manager of mining and steel mill sales, assistant to the engineering vice president and in 1941 became vice president of engineering. He retired from General Electric in 1953. He is now chairman of the Technical Advisory Panel on Atomic Energy in the Department of Defense, and of the Divisional Committee on Scientific Personnel and Education in the National Science Foundation.

Whitwell Gives Tribute to Sales Allies of the Electric Companies

Nearly 50 Are Cited in PEA Address—Associations, Publications, Manufacturers, Political Conventions, Others Named by Utility Consultant

NEARLY 50 sales allies of the electric utility industry were singled out for tribute by George E. Whitwell, Philadelphia utility consultant and former vice president of The Philadelphia Electric Co., in an address before the Pennsylvania Electric Association at its recent annual meeting in Pittsburgh.

He commended first each electric utility "as the sales ally of all other electric utilities"; utility, related and manufacturer associations; the trade and consumer press; state and municipal governments for their parts in area development, utility sales and non-sales personnel, political conventions and many more.

Reviewing his 30 years of utility selling in Pennsylvania, Mr. Whitwell recalled that at the beginning of his career there was recognition for few of the allies as we know and appreciate them today. He told PEA, "had we then had them, I think electric utilities would have had little—if any—conception of their value."

In the past three decades, however, he pointed out, developments have shown clearly the ever-increasing favorable effects which these allies have had upon the growth of the utility business. "More important is the fact that the well-being of all these cooperating elements has increased more and more rapidly as the passage of time has proved that the interdependence of these allies form mutual advancement," he said.

He credited the "real progress in the sale of specific devices" to an enlightened sales interest which demonstrated repeatedly the basic objective of all, utilities and allies—a public realization that the use of electricity brought expanding standards of living and a joy to working.

Mr. Whitwell's tribute to these sales allies are noted here in excerpts from "Our Sales Allies—Bless 'Em," his address before the association:

"Now who are and what are some of these sales allies of the electric utilities who contribute to this specific end of a better life? What have been their contributions to the development of the use of electricity?

"I suppose the first situation to be mentioned is the role played by each electric utility as the sales ally of all other electric utilities. The cooperation in this respect has been good—and with some activities excellent—but I think, as with almost anything else, it can be made better. Edison Electric Institute and State and other utility associations and their devoted—in some instances almost dedicated—committee members have done outstanding jobs of sales planning, coordination and promotion. It seems to me that these hard-working people have earned the right to still more complete and enthusiastic support for their efforts. Let us all give that one a little thought as well as a lot of action.

Non-Sales Employees Cited

"The next sales allies that come to my mind are those employees in each utility not connected with its sales department. There is so much that they can do to help, if only they understand sales objectives. I do not know the amount of assistance they are giving now but I believe it is substantial. I suggest that each sales department discharge its obligation of bringing understanding of its objectives to these allies within its company. Then, because attainment of these objectives is to each employee's own advantage and to that of the company itself, and other allies and the public, there is every reason why these potential sales allies should all become active ones. In return, the members of many sales departments are trying to give intelligent assistance to other departments. It's a two-way street.

"The electrical industry associations, other than those of utilities, are basic among our sales allies. The members of the National Electrical Manufacturers Association, The National Association of Electrical Distributors, National Appliance and Radio-TV Dealers Association, National Electrical Contractors Association and more recently the National Association of Plumbing Contractors provide research, manufacture, distribution, coordinated promotion, retail sale, and installation of home, farm, commercial and industrial equipment and appliances. Electrical inspection; the indispensable teamwork in local electrical educational and promotional activities through Leagues or the equivalent; and the associations of a few specialty manufacturers complete a list of these basic sales allies that is formidable indeed.

"The wealth of industry magazine material aids all electrical interests regularly and well. For me to say more would only gild the lily.

"Directed more specifically to domestic appliances, trade publications have helped greatly in bridging the large gap that once existed between dealers and utilities, and in markedly raising levels of specialty merchandising, profit possibilities for dealers and kwhr-use by the utilities' residential customers.

"Other sales allies are understandably more or less recent arrivals. *Look, Life, Business Week, Saturday Evening Post, Newsweek, Fortune* and many other magazines complimented electricity, the equipment which uses it, and its manufacture, distribution and sale by utilities. Opinion formers, they ploughed much more ground and softened-up many customers of the entire electrical in-

dustry through written and other contributions to the basic objective of all — better living and working through greater use of electricity.

"The women's magazines are the advisors, guides and helpers for the 'purchasing agent of the home.' All of us in or close to the electrical industry owe them a rousing cheer.

"The home is the cornerstone of better living, better people and a better America. Everybody has to have one; almost everybody wants to own one. Homes are new and old and in-between. Many need modernizing. What a market! What sales allies these shelter magazines are becoming!

Farm Homes are 'Special'

"A special but most important case involves the farm, rural areas, and even the outlying suburbs of metropolitan centers. I suppose the farm house is a type of home reached by the women's and shelter magazines. It is, however, a special type with peculiar problems. To these problems, NEMA's First National Rural Home Electrical Load Building Contest must have provided answers for manufacturers, dealers and utilities. There are available also the United States Department of Agriculture *Bulletins*, the American Society of Agricultural Engineers, and, closer to the farm and the farm-house, the Future Farmers of America and the Future Homemakers of America.

"There are also Four-H Clubs, college extension organizations, county agents and others. Publications addressed directly to rural areas, which back up and disseminate farm and rural home electrification programs are sales allies all. They cover the entire agricultural field.

"Real forward steps by home builders have been accelerating recently. There are men in this audience who have taken leading parts with local and national groups of home builders in helping them with arrangements with FHA to encourage enlarged electrical service entrances in new homes. Builders, more and more, are installing modern wiring and more electrical appliances in these homes. Their trade papers are giving fine support.

"Another segment deals with those who come within the influences of the sales activities of the electrical industry rather than being of them or inherently closely related to them. The Chamber of Commerce of the United States has a direct interest in retailing and markets of all kinds. Running water, of immediate interest to pump manufacturers; The National Frozen Food Distributors Association; and the Inter-Industry Farm Electric Utilization Council have educational and promotional programs to advance the basic objectives I have been stressing. The American Institute of Electrical Engineers among many technical activities, interests itself in the education of the manpower the electric industry, including its sales departments, must have. A relatively new field for banks and savings and loan associations is the promotion of more use of electricity so that they may enjoy greater opportunities for financing. Even the American Heart Association is in the picture.

"Lighting, as old as the electrical industry itself, continues the Better Light-Better Sight Bureau, established more than 20 years ago. There have been Certified Lamps and the Certified Fleur-O-Lier. The newest in this category is the Beauty-plus Lamp. The Illuminating Engineering Society, The American Home Lighting Institute, the National Lighting Bureau and several trade journals in the lighting field are allies of long standing in residential, farm, commercial and industrial sales activities.

Allies Diversified

"The wide diversity of interest represented by a large number of sales allies, is evinced by 'Reddy Kilowatt,' now more than 20 years old; National Electrical Week to be really born in February; Electric Companies Advertising Program; *Farm Electrification*, and the *Sales Planner*, published by EEI; Public Utilities Advertising Association, which is invaluable to our advertising departments; *Better Light-Better Sight News;* the activities of Kelsey-Frazer, Inc.; the Electrical Information publications; the Industrial Electrification Council; Air Conditioning and Refrigeration Institute; the American Society of Heating and Ventilating Engineers; and the American Welding Society, all are in there pitching for the electrical industry.

"Still another type of sales ally has been developing recently—the activities of state and municipal governments in connection with area development. Right in Pennsylvania, we have good illustrations of this help; first, in the State Administration's activity, through its Department of Commerce, in connection with industrial development; and second, in the area development programs that are being pursued at local levels. Cooperation with these allies will be mutually helpful.

"In and out of the electrical industry, the home economists are among our most effective helpers. The Electrical Women's Round Table fills a need not otherwise met.

"'Action,' the American Council to Improve Our Neighborhoods; the *Better Homes and Gardens* $25,000 Home Improvement contest; Operation Home Improvement, and 'Kitchen Call' could not have been more down our alley had they been so designed—which they were not. 'Live Better . . . Electrically,' a phrase which, with some difficulty, I have not yet used so that it might be saved for this spot, produced last Spring a new conception of allied industry-wide sales promotion.

"Previously, the electric industry had hailed the individual advertisements, on some of its basic problems, of several manufacturers. Among them are 'Live Better . . . Electrically,' an all-embracing theme, already being used, according to a July, 1956, *Electrical World* by 39 competing manufacturers who are listed. It is believed that the number is nearer 50 now. Even greater support for it is promised.

"Still another brand new type of ally appeared at the recent national political conventions. There, four electrical manufacturers gave extremely valuable television time for commercials reaching millions of electricity users on the electrical industry promotions of 'Live Better . . . Electrically' and HOUSEPOWER. This matter of our sales allies indeed has gone recently from high gear to overdrive.

HOUSEPOWER Is Newest

"The last phase deals with modern wiring in the home; its promotion; its financing; the outstanding contributions to it for many years by the National Adequate Wiring Bureau and the newest conception of what good wiring permits — HOUSEPOWER. It is the latest sales ally available for use by whoever wants it. And is it being used! It is estimated that millions of dollars will be spent

on its use as an advertising and promotional theme nationally by EEI and many of the allies I have been mentioning. Other millions will go for the same purpose at the local levels.

"Gentlemen, these are our sales allies. It is my opinion that when we return to our homes they will follow us in ever-increasing numbers and effectiveness.

"I can think of no greater or more intriguing future prospect.

"I have mentioned the more or less recent acceleration in the help received from our sales allies coincident with increases in kwhr sales. We all know there has been for some time a steady increase in the average use per residential customer.

"The climbing line on residential sales charts is an indication, if not a measure, of the increasing help received from sales allies and of the better and better efforts of our sales departments, and indicates it is heading straight for a future of amazing, but possible, results.

"Perhaps I have not yet found a measurement for the great evolution that, over these years, has characterized our sales allies. I know you agree with me that it has been a development of outstanding importance; that it is growing now at the fastest rate yet attained; that our utility sales departments have skillfully adapted their methods in order that the greatest possible benefits have been obtained for all interests involved; that we in the electric utility business collectively have been a good sales ally, too; and, finally, that all of us in the electric industry and subject to its influence can take no little satisfaction in knowing that we have contributed, probably to an extent as great—if not greater—than any other industry, to better and fuller living and working, and to greater public service.

"The future is yours. I know it is in safe, intelligent, sympathetic and competent hands. I believe that, with your guidance and that of others like you all over the country, the latest sales theme will change to 'Live Still Better . . . Electrically with Complete HOUSEPOWER.' I am sure that the high spring-board, from which the future starts, will, 30 or perhaps only 15 or 10 years from now, appear to be as insignificant as the results of

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Electrical Conference for Women Sponsored by EEI

THE importance of the home service woman as a sales power in the residential field was highlighted at the first "Live Better . . . Electrically" Women's Conference in Chicago, Jan. 10-12, sponsored by the EEI Home Service Committee.

Registration totaled 231, mostly women, representing the nation's electric utilities, appliance and food manufacturers, national magazines and trade associations located in 32 states.

The home service women were hailed as a major selling influence for electrical kitchens and laundries, home lighting and wiring by Edwin Vennard, vice president and managing director of Edison Electric Institute.

Mary Webber, a residential lighting specialist for General Electric Co., called for more women to enter the home lighting sales field. She asserted women need not be engineers to help housewives light their homes more effectively, adding that at present there are not enough sales people to meet the demand or the need.

A definite place exists for women in selling home wiring, Frances Armin, director of education and promotion for the National Adequate Wiring Bureau, told the conference. She said housewives often prefer talking to another woman about wiring, because they know she will talk in non-technical terms easy to understand.

Coordination of promotional activities also was suggested. The EEI Sales Promotion Calendar, National Electrical Week, HOUSEPOWER, "Live Better . . . Electrically" and "Better Light - Better Sight" campaigns were among the programs cited to achieve greater sales impact in the home service field.

Inter-industry coordination to serve the end goal of women's interests was urged by R. L. Coe, resident sales manager, Union Electric Co. of Missouri and chairman of the EEI Residential Group. He told the conference that lines of communication among women associated with utilities, electrical manufacturers, trade associations and national publications should be maintained for the mutual benefit of all.

This meeting marked the first time the electrical industry has ever convened to "pool" ideas serving women consumers and coordinate activities of women who sell the consumer.

LAST CALL!

A reminder to the many companies with exceptional sales results in the exceptionally successful sales year of 1957.

February 1 and 15, 1957, are deadlines for entries in Awards Contests administered by EEI covering outstanding sales accomplishments in these fields:

Overall Rural Electrification
(Thomas W. Martin Award)

Electric Range, Electric Water Heater, Commercial Electric Cooking Promotion
(George A. Hughes Awards)

Overall Home Service Activity
Specific Home Service Activity
(Laura McCall Awards)

Lighting Education
(Better Light-Better Sight Bureau Awards)

Residential, Commercial, Industrial Lighting Promotion
(Lighting Promotion Awards)

Single Rural Electrification Project
(Frank Watts Awards)

Automatic Laundry Promotion
(George Westinghouse Awards)

Industrial Electrification
(More Power to America Awards)

Don't miss out on the opportunity offered by the EEI Awards Contests to win national and local recognition as well as the coveted Awards for your outstanding promotions.

Edison Electric Institute
420 Lexington Ave.
New York 17, N. Y.

First Full-Scale Celebration Planned for National Electrical Week

THE National Electrical Week observance Feb. 10-16 will "come of age" as a major all-industry educational and promotion event, Merrill E. Skinner, chairman, has announced in a final advance progress report from the NEW committee.

"With the tremendous backdrop being provided by network television, radio, and publication advertising, and with all the reports we have on vigorous state and local activities, we are certain that National Electrical Week will have an outstanding cumulative impact throughout the United States and Canada," Mr. Skinner said.

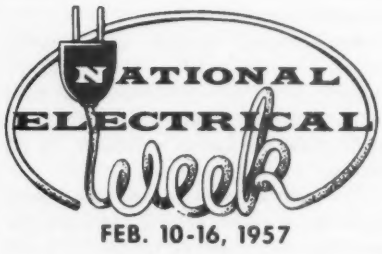
More than 20 national advertisers have reported specific plans to carry NEW institutional messages on their various programs before and during the Week, and another 30 have said they will do so, without giving specific plans.

Their messages, Mr. Skinner said, will aim at enhancing public appreciation of electricity and the contributions of the electrical industry to national progress and the economy of both the United States and Canada.

"The entire electrical industry has swung behind the Week with consistent enthusiasm," Mr. Skinner said.

In one phase of the observance alone—network television—programs reaching 20 and 30 millions of people each will salute the objectives of NEW, including the Allis-Chalmers "Farm and Home Hour" on Feb. 9 and 16, the General Electric "Theatre" and Reynolds Aluminum "Circus Boy" on Feb. 10, Westinghouse's "Studio One" on Feb. 11, Sylvania's "Buccaneers" on Feb. 9 or 16, DuPont's "Cavalcade," the Kaiser "Aluminum Hour" and General Electric's "Cheyenne" on Feb. 12.

In publication advertising, just the highlights include a double-page Westinghouse NEW *Time* advertisement on Feb. 11, an Allis-Chalmers NEW ad in the *Saturday Evening Post*, and "Live Better . . . Electrically" ads for NEW in the Feb. *Fortune* and *Readers' Digest*. Both LBE and HOUSEPOWER will use NEW as a springboard for their 1957 campaigns.



The former has distributed a special NEW and LBE supplement to more than 10,000 daily and weekly newspapers and produced a complete dealer and utility kit around its *Readers' Digest* promotion. The Edison Electric Institute, National Adequate Wiring Bureau, and the National Electrical Contractors Association will launch their 1957 HOUSEPOWER advertising programs during NEW in ten of the nation's leading magazines.

Reports to the national NEW committee indicate vigorous state and local observances from coast to coast —including civic luncheons, speakers' bureaus for service clubs and schools, special newspaper sections, utility and manufacturing plant open houses, television and radio programs and spot announcements, use of the "Electricity in Your Home" quiz booklet among high school students, special dealer sales campaigns and distributor contests.

7,500 Guides Printed

One measure of the activity country-wide has been the demand for the NEW Planning Guide and materials' kit. With limited funds, the national committee printed only 7,500 guides, and the initial distribution last fall was to a carefully selected list of some 3,000 utilities, electrical manufacturers, leagues, inspector chapters, and key representatives of the other NEW sponsoring and endorsing organizations in the industry. At the same time, to gain thorough coverage, the internal media of the various trade associations urged their memberships to order planning guides only if they were essential to sparking or carrying out programs in their communities.

As of mid-January, nearly a month in advance of the Week, all of the national committee's supplies were exhausted.

Here are some planned activities.

NEW Chairman Merrill E. Skinner, vice president and director of sales of Union Electric Co., St. Louis, will open the Week in the nation's capital at a trade conference and exposition luncheon Feb. 12 sponsored by the Electric Institute of Washington D. C.

M. J. McHenry, president of the Canadian Electrical Council which is coordinating NEW activities throughout Canada, reports that "the national rallying point" will be an industry meeting at the Royal York in Toronto "with a speaker of cabinet rank."

The Phoenix, Ariz., committee will launch its program with a dinner in Phoenix on Feb. 11, addressed by the governor. In addition to a statewide educational program, the Week will be featured by special tours and open houses at the new facilities of Arizona Public Service Co. and the Salt River Power District.

The feature of the Week in Cincinnati will be an Electrical Progress Exposition sponsored by the Cincinnati Electrical Association.

The Electrical Association of Detroit is planning a full-scale program of civic luncheons with a large speakers' bureau. One of the highlights there will be the distribution of the "Electricity in Your Home" quiz—which stimulates an appreciation of adequate and safe wiring—to some 300,000 high school students in Detroit and outlying areas.

The St. Louis committee plans a civic program similar to that in Detroit, and its "Electricity in Your Home" booklet campaign will reach 200,000 students. A home show will highlight Philadelphia's NEW. More than 6,000 science students in the Cleveland area will participate in special General Electric NEW tours of the Lighting Institute at Nela Park.

Victor W. Hartley, managing director of the Pacific Coast Electrical Association, Inc., has reported that local

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230-Kv, Oil-Filled Cable Installation at Huntley Station, Buffalo, N. Y.

Highest Voltage, Low Pressure, Oil-Filled Cable in the United States to Be in Operation Before the End of 1957

By J. M. Geiger and C. T. Nicholson

Chief Electrical Engineer, System Project Engineering Department; and Electrical Engineer, Western Division Engineering Department, Niagara Mohawk Power Corp.

Presented at EEI Transmission and Distribution Committee Meeting, Buffalo, N. Y., Oct. 18, 1956

TWO low-pressure, oil-filled, 230-kv, buried-cable circuits are planned for installation in 1957 at the C. R. Huntley Generating Station in Buffalo. The cables are needed to connect the transformers of two proposed generating units with a new 230-kv outdoor switching structure. The transformers and the structure will be about 1,500 feet apart.

The application of low-pressure, oil filled cable to 230-kv service is new in our country and therefore should be of general interest. Overhead lines and pipe type cables were considered for the project, but oil-filled cable appears to be best suited. It is the purpose here to review the factors which led us to this conclusion. Also, a brief description of the proposed cable installation will be presented.

The addition of the new generating units at Huntley will bring the capacity of the station to well above 1,000 mva, and it is understandable that there is no available yard space for expansion of overhead connections. The resort to underground facilities is one of necessity.

The generator transformers will be located along the outside of the station wall at a point corresponding to the location of the generating units within the building. This arrangement will place the transformers in a relatively narrow strip of land between the station building and the Niagara River and at a distance of about 1,000 feet from the north end of the building at which point space is available for an open switching structure. Cooling water tunnels and similar obstructions cross from the station to the river and these will create physical as well as thermal problems for the cable system.

Either high oil pressure pipe type cable or lead-sheathed, oil-filled cable would be suitable for the proposed installation at Huntley. The selection of the oil-filled type was made after careful evaluation of the features of each construction.

Economically either type cable could be provided for about the same total cost.

1. Relative installation difficulties:

(a) Need for contractor work: There is no high voltage pipe type cable in the Buffalo system and consequently no facilities are available locally for pipe installation. A contractor versed in the art would have to be brought in if pipe type construction were selected for the Huntley installation. In view of the fact that only 1,500 circuit feet per generating unit is proposed, we believe that it would be difficult to interest suitable contractors in the work. This factor, as well as the fact that oil-filled cable comes to us completely assembled by the maker and requires only normal installation skills such as are at hand in our own cable crews, goes far in indicating that oil-filled cable is the most appropriate for our situation.

(b) Installation skill: Pipe type cable has a greater tolerance for installaton imperfections than oil-filled cable. The high operating oil pressure of pipe type enhances insulation stability and the pipe is not readily subject to severe mechanical injury. Oil-filled cable on the other hand is very sensitive to gas or moisture in the insulation or oil. This handicap may be dealt with satisfactorily with guidance in the field from the manufacturer's organization. Since the proposed lengths of each conductor can be manufactured and supplied in a single continuous length, no splices are planned for the circuits and the only work in the field which will involve the insulation is the makeup of the terminals. Terminal makeup lends itself to careful supervision and subsequent treatment of the affected oil and insulation.

(c) Terminals: The terminals will be substantially the same as those which have been used on pipe type cable installation. The fact that they can be readily adapted for oil-filled application is fortunate because it is unlikely that the project would use oil-filled cable if a new design of terminal had to be worked out.

Another installation simplification which accrues from the choice of single conductor cable is the avoidance of trifurcation and associated problems of pipe type construction. With single conductor cable the termination is not critical as to exact conductor length, and the lead-covered cable is much easier to train into the terminal wiping bell.

(d) Resistance to mechanical injury: The oil-filled cable makeup proposed for the project will not only have a lead sheath such as is normal for this type of cable, but the sheath would be covered with a polyethylene jacket. The jacket will function not only for corrosion and mechanical protection after installation but insure against minor

mechanical sheath damage during installation. While the pipe type cable is superior from the standpoint of the risk of injury, we feel that oil-filled cable with jacketed sheath will be fully satisfactory for both installation and operation.

2. Relative operation simplicity:

(a) Oil pressures required: Once the installation is successfully made, it appears that oil-filled cable will be simpler to operate and maintain than high pressure pipe type cable. The hydro static pressure of the oil in the oil-filled cable is limited to about 15 lbs. per square inch, and this pressure is maintained by constant pressure reservoirs and gravity while a pipe type installation would require pumps, large reservoir tank and considerable accessory equipment to insure against abnormal loss of cable life through inadvertent operation at unsafe pressure levels.

Fortunately, the terrain of the cable route is virtually level so there will be no appreciable variation in static oil pressure along the line.

The manufacturer is supplying reservoirs at a common elevation at each end of the system, together with normal oil-channeled conductor and a fluted sheath, to insure adequate oil freedom both during installation and for subsequent operation.

(b) Operating temperatures: Pipe type cable offers a possibility for dealing with thermal hot spots along the proposed route. There are numerous adjacent structures and facilities which may be conducive to undesirable thermal conditions and the development of localized heating. If this condition were encountered in the operation of pipe type cable, the possibility exists for slowly circulating the oil in the system so as to efficiently average the temperature over the entire run. In the case of oil-filled cable, such a process doesn't seem to be advisable and reliance will have to be placed on efficiency of the cooling process to be provided (burial in wet sand) and on temperature detectors along the route.

3. Operating reliability:

(a) Likelihood of failure: In the matter of operating reliability, oil-filled cable has a long and almost perfect operating record throughout the industry, while the performance of pipe type systems has been somewhat less perfect.

(b) Ease of repair: While both systems have excellent reliability, the importance of the circuits proposed as generator leads requires preparation in advance for prompt repair if failures should occur. A pipe type cable failure would require de-energizing the affected circuit, freezing and cutting in a repair splice. This would require a minimum of four days to complete. It seems that this process would be lengthy, since a 240-mva generating unit* would be idled until the circuit could be completely reinstated.

The oil-filled type cable system offers a much better arrangement for prompt restoration in case of failure. Present plans provide that the individual cables of the oil-filled system will be buried in sand in a horizontal configuration. It would not be easy to replace a failed cable so it is proposed that a single spare cable be placed at the time of installation of the system. This spare cable will be the seventh conductor and will be terminated at both ends in normal potheads so that a failure in any conductor can be quickly remedied by a change of overhead leads at the terminals. An added spare conductor can then be purchased, delivered and installed as a normal project.

(c) Emergency repair: Another possibility exists with the use of single conductor, oil-filled cable. Since there are no magnetic materials surrounding the circuits, it is possible to employ an overhead conductor as an emergency conductor. There is enough room in the space above the proposed cable route to accommodate an emergency overhead conductor if it should be needed.

Carrying Capacities

4. Comparison of carrying capacities:

(a) Conductor sizes: Extensive consideration has been given to the problem of conductor size required for the transformer output of 240 mva. It appears that pipe type conductors would have to be 1,500 mcm while oil-filled cable conductors could be 1,250 mcm. Either of these sizes is normal in the art and would be acceptable for the project. The oil-filled size although having the smaller amount of copper, actually is considered to have five per cent more normal carrying capacity than the larger pipe type conductor of 1,500 mcm.

(b) Thermal environment: To realize the required ampacity from either type cable, suitable soil thermal conductivity must be maintained. It is proposed for the oil-filled installation to surround the cable with dense sand and to maintain moisture in the sand in quantities required to produce safe cable temperatures. A thermal recording system will be necessary to provide constant monitoring of sheath temperature.

(c) Emergency capacity: On the matter of emergency capacity the two types of cable systems may differ appreciably, but since they would be in the nature of individual generator leads, there is no emergency condition contemplated. It would be interesting to know the relative capacity of the two systems for short time overload or infrequent load rating. No investigation has been made of this characteristic.

5. Corrosion protection: The protection of either type cable from corrosion is a prime consideration. While the route selected for the cable run is not on the side of the station where coal storage affects soil conditions directly, we feel that any location in a central station yard is subject to the threat of corrosion.

Cathodic protection would be provided for any type cable installed. In addition, the cable would have the benefit of recognized type of protective coating. In the case of pipe type cable, the coating would be one half inch of semastic with field-applied covering over the pipe joints. The oil-filled cable would have a continuous factory applied jacket of high molecular weight, non-cracking, black polyethylene.

It seems to us that the odds in favor of complete protection go with the polyethylene jacket construction, not only because of the adequacy of polyethylene, but also because there would be no field made joints in the jacket.

6. Sheath potentials and grounding: To provide suitable grounding for fault conditions and at the same time avoid induced sheath circulating cur-

* The generator capacity is 258 mva; however, after deducting house service and loss in the step-up transformer, the cable loading will not exceed 240 mva.

rents with consequent heating and loss of carrying capacity, the single conductor oil-filled cable has the disadvantage that care must be exercised to provide bonding at only one end. Fortunately, for the comparatively short circuit length (1,500 feet) involved in the project, open-circuited sheath potentials are not a problem. Pipe type construction is completely free of these bonding and grounding limitations.

Description of Installation Proposed

Planning is now in process for the installation of the oil-filled cables. The cables are scheduled for shipment on seven reels in the spring of 1957. The three months following will be allocated to installation and acceptance so that the first circuit will be ready to be placed in service in September. The second circuit is not needed until the following year, although both circuits and the spare conductor will be completed at about the same time as the first circuit.

1. Cable makeup: The construction of the cable proper will be that normally used for oil-filled cable. The 1,250 mcm copper conductor will have a one half inch diameter hollow center. The insulation wall proposed is 835 mils of paper. The lead sheath will be fluted internally. The thickness of sheath will be 160 mils of arsenical lead. A jacket of 115 mils thick high molecular black polyethylene will be provided over the sheath. This makeup results in an overall diameter of 3.92 inches. The seven cables required naturally will be supplied on individual shipping reels each containing about 1,500 feet of continuous cable.

2. Detail of cable trench: It is proposed that both circuits and the spare conductor be buried in a common earth trench with the conductors spaced about eight inches on centers horizontally. The depth of conductors below grade is planned to be four feet.

The trench to accommodate this type of installation generally is six feet wide and five feet deep.

The cables will be placed in the trench and surrounded with high density sand so that there is about 10 inches of sand between the group of cables and the top, sides and bottom of the trench. Somewhat above the group of cables, two perforated fiber pipes will be placed to provide water to the sand whenever the cable operating temperatures indicate the need. There are several operating problems with this arrangement which are receiving attention now.

One is that of insuring reasonable uniform distribution of water over the length of the circuits. Another is the problem of the saturation of the surroundings with resulting softening of the soil and as well the problem of flooding of adjacent subterannean structures.

3. Placing cables in trench: While the idea of arranging the seven cables, each of which is 3.92 inches in diameter, in sand in a trench seems simple enough, there is the major problem of physically placing the cables, since there are numerous pipes which cross the proposed trench. It would be possible to cut the obstructing pipes temporarily so that the cables could be paid-off from moving reels into position in the trench. It would also be possible to provide suitable rollers on frames in or above the trench so that the cables could be pulled in. These and other methods that can be used are being studied.

4. Protection: The group of cables will be protected from mechanical damage from above by concrete slabs.

Control of Temperature

5. Temperature control: It is planned that the operating temperatures of the cables will be closely followed by means of recording equipment. Resistance elements encased in lead tubes will be placed on one of the cable jackets at about a dozen selected locations along the run. The leads from the elements will be buried in the trench and will terminate at a recorder in the Central Station. With this arrangement, the temperature gradient over the route will be evident and as well any unusual trends in temperature. From this information, the moisture in the sand backfill will be regulated to provide suitable thermal environment for the cables.

6. Cathodic protection: Although the polyethylene jacket of the cables is expected to provide efficient control of corrosion of the cable sheaths, the extreme importance of the circuits justifies the installation of a cathodic protection system.

The cathodic protection system envisioned for the project will provide a negative sheath potential of about 400 millivolts to earth. The cable sheaths will be adequately grounded so that fault currents will be properly handled and the sheaths will be open circuited so that there will be no induced circulating currents.

It is proposed to ground all sheaths at one end by bonding them all together and connecting the bond to the extensive station ground through a .004-ohm stainless steel bar six feet long and one-half square inch in cross section. Such a bar will be adequate to handle the ground current expected with a cable fault.

About 100 amperes total of direct current will be passed through the .004-ohm resistor to the cable bond and the negative side of the current supply rectifier. The 100-ampere current flowing through the .004-ohm resistor will move the d.c. potential of the cables 400 millivolts below earth potential and so provide cathodic protection.

There is a small hazard in the grounding arrangement described since, if the sheath of one of cables is completely severed, the single grounding point would not be effective beyond the break. It is unlikely, however, that under conditions of a ruptured sheath that the cable would be energized even with test potential. Perhaps some safeguard should be taken, however, to prevent accidental contact at the pothead bases.

The importance of the integrity of the single bond can't be overstressed since the polyethylene jacket is such a good insulator that there will be no distributed grounding to carry charging currents if the bond to any cable sheath opens or burns off.

Terminals and Reservoirs

There are 14 terminals which will be required for the ends of the seven conductors. These will be placed on steel supporting structures much in the manner which has been employed for pipe type installations. The terminals have all of the outward appearance of high pressure pipe type construction and are substantially identical internally.

While the terminals are an adaption from designs for pipe type cable, similar units have been used on factory testing of oil-filled cable and make-up has been thoroughly worked out.

The reservoirs will be mounted at a location whereby their centerline is four feet above the top of the cable terminal or 30 feet above the lowest point in the cable run. This differential in elevation is equivalent to about 12 pounds per square inch which added

to a positive pressure in the reservoir of one pound will result in a maximum cable operating pressure of about 13 pounds per square inch above atmosphere which is a moderate pressure for the arsenical lead sheath.

Operating Current and Voltages

Inasmuch as the cable installation will function as generator transformer leads, the operating voltage will be subject to variation. The cable will be suitable for operation up to 242 kv continuously.

The maximum output of each unit will be limited to 240 mva. Cable carrying capacity will accommodate this output over the range of voltages expected, 220 kv to 242 kv. Comparison of required and actual rating of the cable for 95 per cent daily load factor and 20 degrees C earth ambient temperature has been theoretically established as shown in the following figures:

Voltage	Current Required to Provide 240 mva	Cable Current Rating
230 Kv	603 amps	646 amps
242 Kv	573 amps	627 amps

Operating experience will, of course, provide some indication of the best cable capacity but with the six or seven per cent leeway in allowable current indicated in the table, it is expected that the cable will be adequate even if reasonable derating is indicated.

Conclusion

It has become apparent to us as the designs for the proposed installation for 230-kv cable at Huntley have developed that either high pressure type or low pressure oil-filled cable would serve our purposes at about the same cost. While the application of low pressure oil-filled cable to 230 kv is new in the U. S., it is considered sound and practical as demonstrated in a number of European installations, and has an advantage where the special installation skills required for pipe type constructions are not readily available.

In addition, it appears that the operation of oil-filled cable for the short distance proposed will be simpler than if it were pipe type with the various problems of high pressure operation.

The success of the oil-filled installation, however, will depend to a large extent on the perfection of the workmanship in field.

Two GPU Subsidiaries in New Jersey Integrated on Divisional Basis

SIX division managers have been appointed as part of the planned integration of Jersey Central Power & Light Co. and New Jersey Power & Light Co., Charles E. Kohlhepp, president of the two New Jersey electric utilities has announced.

Mr. Kohlhepp said the combined areas of the two General Public Utilities Corp. subsidiaries would be established on a divisional basis with responsibility for local operations resting with the division managers. They will report to, or work closely with, the respective vice presidents responsible for departmental activities.

Vice presidents and other officers whose departmental duties extend over both JCP&L and NJP&L are: Howard B. Allen, vice president, public and employee relations; Edward J. Ingram, vice president, sales; William H. McElwain, vice president, engineering and operations; Clyde A. Mullen, vice president; Robert R. Parker, vice president, accounts and finance; Jackson T. Murphy, treasurer and Alfred Healey, secretary.

The newly designated Northern Division, formerly NJP&L's Eastern Division, will continue to be managed by Jack H. Miller with headquarters remaining in Dover.

Walter E. Gess continues as Western Division manager with headquarters at Phillipsburg.

The newly designated Central Division, formerly JCP&L's Northern Division, will continue to be managed by James V. Carver with headquarters at Morristown.

The re-established JCP&L Bay Division, with headquarters at Keyport, will be managed by Jack R. McGalliard, formerly assistant to the superintendent of transmission and distribution of JCP&L.

Robert H. Sims, formerly division superintendent of JCP&L's Coast Division, has been appointed to the newly created position of division manager with headquarters at Allenhurst.

T. Roland Height, formerly division superintendent, has been named to the newly designated position of manager of the Southern Division, previously known as JCP&L's Central Division, with headquarters at Lakewood.

The utility president emphasized that integration of JCP&L and NJP&L will result in even greater efficiency directly affecting customer service.

He also pointed out that no mass relocation of personnel is involved, although some activities may be better administered from more centralized locations requiring the shift of essential personnel in those instances. JCP&L and NJP&L serve a total of approximately 325,000 electric customers in about 43 per cent of the total square mile area of New Jersey, covering 13 counties.

Lighting Course Offered by Westinghouse

A NEW packaged lighting training course, "Modern Illumination Fundamentals, Techniques, Applications," has been prepared for power company sales departments and others by the Lamp and Lighting Division of Westinghouse Electric Corp., Bloomfield, N. J.

The course includes 18 sound-slide films and records with the latest information on lighting and 18 separate lesson books, an instructor's manual and a revised copy of the Westinghouse *Lighting Handbook*. The handbook has been updated to cover the newest ideas in lighting layouts, light sources and lighting levels, in addition to easy-to-use reference tables.

Lessons include: 1—Mechanism of the Human Eye; 2 — Light and Vision; 3—Illumination Terminology; 4—Quantity Requirements of Good Illumination; 5 — Quality Requirements of Good Illumination; 6—Importance of Color in Illumination; 7—Incandescent Lamp; 8—Mercury and Other Electric Discharge Lamps; 9—Fluorescent Lamps.

Also, 10—Principles of Light Control; 11—Systems of Light Control; 12—Calculation of Interior Illumination; 13—Office Lighting; 14—School Lighting; 15—Store Lighting; 16—Industrial Lighting; 17—Floodlighting; 18—Cost and Maintenance of Lighting. The kit costs $250.

The Preference Clause —Two Alternatives

ONE of the primary objectives of public power is to make it appear cheaper than investor financed power. True costs of production are the same regardless of who is the producer. The only way TVA or any other public power agency can permit a lower rate for the sale of energy is through subsidy.

The platforms adopted last summer by the two major political parties both support preference to public bodies and cooperatives in marketing of Federally produced power. This issue then is not partisan. In theory this preference applies to availability of energy. Its advocates say it does not apply to price. Some 80 per cent of the users of electricity in the country receive their supply from investor-financed utilities and in paying for it pay a share in Federal, state, and local taxes, interest on money at rates established in the commercial market, and miscellaneous administrative costs of the companies concerned. The 20 per cent of the nation's customers who receive their electricity under preference clauses pay nothing towards the general costs of the Federal government, and in only two of the Federal systems pay any taxes to state and local governments. In the price they pay for energy they do not pay for employee retirement, insurance, auditing, and similar miscellaneous administrative costs actually incurred.

I understand that both political parties are opposed to setting up various classes of citizens with one group being favored above the other. I have tried to rationalize this position and that on the preference clause to estimate what action we might reasonably expect to see. If the preference clause is to remain and inequity is to be removed, I presume that one of two alternatives will be adopted. Investor-financed utilities could be relieved of their tax burden, or as it might be phrased, relieved of their role as tax collectors. This would certainly give to investor-financed power one of the advantages now exclusively enjoyed by public power; but in 1955 the electric utility industry paid $1,447,000,000 of its receipts in taxes. There is left then a question of how an equal

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National Edison Birthday Celebration Planned by Electric Industry

THE electric industry in the United States will sponsor on Feb. 11 a nation-wide program on the occasion of Thomas Alva Edison's birthday. It will be called the National Edison Birthday Celebration, marking the 110th anniversary of his birth. Chairman of the Celebration is Walker L. Cisler, president of The Detroit Edison Co.

The other committee members are well-known in the electric industry and for their interest in the progress of our youth in technical fields.

This celebration has been conceived as an annual event, using the commemoration of Edison's birth as the occasion for the development of a science-youth day. The objectives are:

1. To encourage young people in greater numbers to take advantage of the growing opportunities for careers in science and engineering;
2. To stimulate greater interest in science education and the new world of technology emerging from the nation's 4,000 research laboratories; and
3. To focus national attention on the critical shortage of scientists and engineers.

President Eisenhower and all State governors are being asked to cooperate in the Celebration by issuing official proclamations emphasizing opportunities for young people in science and technology, and the necessity for expanding and improving science education.

Planning for the National Edison Birthday Celebration includes both the general public on the national level and school youth at the local level. Mr. Cisler said the cooperation received from major industries and organizations is encouraging.

The General Motors Technical Center, will have as guests on Feb. 11, outstanding high school students of chemistry, physics, mathematics and non-science subjects, and their teachers. The Ford Motor Co. will invite high school guidance counselors to meet Ford scientists and engineers on that day. In addition, Ford will print and distribute to every high school principal in the country, a pamphlet about the National Edison Birthday Celebration, urging their cooperation and suggesting appropriate activities.

It is expected that the Atomic Energy Commission will open its non-weapons laboratories to high school students and plan special programs for Feb. 11.

More than 16,000 high school Science Clubs are being asked to highlight this day by arranging special science activities. A broad public information program is now being organized to include major articles in national publications and programs in network television and radio centering around Edison, science, technology, and science education.

The electric light and power company members of the Edison Electric Institute will take active part in their local areas and cooperate on the national level. All the other electric industry associations, as well as many of the electrical groups in other countries, will also participate in making an outstanding success of this undertaking.

Committee members are: Austin D. Barney, president, The Connecticut Power Co.; Walter E. Beckjord, president, The Cincinnati Gas & Electric Co.; James B. Black, chairman of the board, Pacific Gas and Electric Co.; Detlev W. Bronk, Rockefeller Institute; John S. Coleman, president, Burroughs Corp.; William C. Ford, Ford Motor Co.; Donald S. Kennedy, president, Oklahoma Gas and Electric Co., and president, Edison Electric Institute; Thomas W. Martin, chairman of board, Alabama Power Co.; J. W. McAfee, president of Union Electric Co.; William C. Mullendore, chairman of the board, Southern California Edison Co.; Frank M. Tait, chairman of board, The Dayton Power and Light Co.; Charles F. Kettering, president of the Thomas Alva Edison Foundation, is honorary chairman; Harry L. Cherry Jr. is secretary.

Con Edison Forms Apartment House Division to Help in Design of Kitchens

ALTHOUGH living in America's greatest and most cosmopolitan city where trends and patterns are set for the rest of the nation to follow, most New York City housewives among the 70 per cent of the city's population dwelling in apartments actually are deprived of many of the conveniences and comforts enjoyed throughout the country by women who live in private homes.

This was the message delivered by Consolidated Edison Co. recently to the apartment building construction and electrical appliance and equipment industries, real estate management and allied groups in New York.

Most of the city's apartment dwelling housewives have to put up with old fashioned and inefficient kitchen design and cope with insufficient or under-sized kitchen equipment. Contributing to this, also, has been the inadequate wiring problem which, along with poor kitchen design, restricts the use of many labor and time saving modern electrical appliances the company reported.

Present were builders, designers and architects of New York apartment buildings; consulting engineers; electrical contractors; financing institutions; real estate management firms; manufacturers of major and traffic electrical appliances, lighting equipment and kitchen cabinets; and the press, including trade and shelter magazines.

At this meeting at the Hotel Biltmore, attended by more than 500, Con Edison revealed for the first time the findings of a special opinion and fact-finding survey directed at 1,531 New York housewives who live in both new and older apartments and represent a cross-section of the city's apartment-dwelling income groups.

According to Con Edison's survey, the details of which are summarized in a 14-page booklet entitled "So We Asked the Ladies," housewives in New York City apartments want the same beauty, utility and conveniences in their kitchens as they have seen and read about in the kitchens of private homes. And when it comes down to a question of dollars and cents, they are willing to pay for all the things which they want.

As a result there exists in New York a great opportunity for landlords to provide apartment features that will lead to a greater tenant stability; a vast, untapped market for manufacturers, distributors and dealers in the appliance and kitchen equipment fields, and for electrical contractors; a challenge for architects to evolve new design concepts; and an over-all opportunity for the city to demonstrate that it can lead the nation as a place to live as well as lead in business, finance, commerce and creative arts.

More Space Asked

The apartment - dwelling housewives questioned in the survey said they want and need larger kitchens, more counter and cabinet space, better lighting, bigger refrigerators, more freezer space, more electric outlets and sufficient electric capacity to back them, kitchen fans, electric broilers, coffee makers, mixers, improved range design, electric dishwashers and combination washer-dryers.

It was revealed also that in most respects these desires are not being met. Nor is any important trend toward improvement evident. A little improvement in a few categories was found in apartment buildings less than five years old, compared with those more than five years old. However, in most cases there has been no change, and in some the trend actually has been away from popular demand.

To find out why, in addition to the effect of inadequate wiring, electric consumption in New York's apartments has lagged below both the local and national average for private homes, Con Edison decided to "Ask the Ladies."

Their response not only answered the company's quest for facts, but also yielded information equally startling and important for architects, builders, the appliance industry and landlords. This is what the ladies said:

More than a third of the women interviewed are dissatisfied with the size of their kitchens. Average area of kitchen covered in the survey was 78 square feet. Those who were satisfied have 84 square feet. Those who complained have only 67 square feet.

Eighty per cent want dining space in the kitchen; only about 60 per cent have it.

Seventy per cent want more counter space and specify seven feet of it, three feet more than found in the average apartment.

Two out of three women say they don't have enough storage space for appliances.

The Illuminating Engineering Society recommends a lighting level of 40 footcandles for kitchen work area. Lighting in the average New York apartment is 75 per cent below this, at a level of 10.2 footcandles.

Forty per cent of those questioned want over-sink kitchen lighting. Only about four per cent have it. Thirty-four per cent want lighting over the range. Only two per cent have it. Fourteen per cent want under-cabinet lighting. Less than one per cent have it.

Two-thirds of the women say they do not have enough kitchen appliance electric outlets. More than half want plug-in strip-type outlets above the counter.

Refrigerator size averages seven cubic feet, which most women consider too small. They want about nine cubic feet.

There is widespread demand for most of 17 electric kitchen appliances listed in the survey which again emphasizes the need for adequate electric wiring in apartments.

More than 99 per cent of the housewives questioned have gas ranges. But about 34 per cent of them would prefer an electric range.

Only one apartment housewife in 30 has an electric dishwasher. But 12 out of 30 want one—a demand of 40 per cent. About 25 per cent of these say they are willing to pay more rent to get one.

Only 17 per cent have their own clothes dryer. Forty per cent want their own washers, and specify auto-

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The Engineer's Obligation

By Ben Moreell

Chairman of the Board of Jones and Laughlin Steel Corp.

HAVING spent the last half century in the pursuit of engineering knowledge and the practice of engineering, I venture to offer some observations on the engineer's obligations to society and to his fellow man.

In these days of ambitious striving for political preferment, it is customary to bid high for the voter's favor. Candidates hold forth tempting bait in the form of promises of government "handouts" in return for votes. Any reference to the obligation of citizens to preserve and defend the Constitution of the United States, or to their duty to strengthen the basic principles embodied in our Declaration of Independence is conspicuous by its absence. And were a candidate to couple his promises of "something for nothing" with an explanation that, since government produces nothing, it must take from someone else that which it gives away, he would surely raise grave question as to his sanity.

This appears to be an inversion of true values. There was a time when Americans looked upon their government as their servant whose duties are or should be restrained to the primary functions of protecting the life, liberty, and honestly acquired property of every individual. As is traditional in the master-servant relationship, the people were morally bound to support the government; but, in turn, the government was subject to the people's commands.

Today, as we listen to eager aspirants for public office, we must conclude that this old concept has changed. It appears that many of our people now believe that the government is obligated to support them and, at the same time, that it should have authority to tell them how to conduct their personal economic and social lives.

Does this state of affairs have special significance for engineers? I believe so. No other profession has profited more from the work of those who have gone before than have engineers. Starting with the invention of the wheel and proceeding through the long ages which culminate in our present era of jet propelled aircraft, the record of material progress constitutes a revealing account of the debt which we engineers owe to our intellectual and professional forebears.

It is an established fact that the most productive periods of history were those when men had the greatest measure of individual freedom. During those periods they had not only opportunity for personal development, but also incentive for production, since they were permitted to retain a reasonable share of the fruits of their labor without fear of confiscation by private or public agencies or officials.

Since engineers are concerned with harnessing the forces of nature to serve the needs of man, it follows that they have a duty to foster the establishment of conditions conducive to this result, i.e., conditions which guarantee that man's God-given rights to life, liberty, and the products of his honest labor are not impaired. This can be accomplished only if engineers participate in the processes of government, vigorously and in important degree.

Today the greatest threats to personal liberties arise, not from aggressions by foreign governments, but from encroachments by governments upon the rights of their own citizens. If, overnight, all governments throughout the world were compelled by some supernatural power to confine their activities solely to the protection of the lives, liberties, and honestly acquired property of their own citizens, the world would be transformed. We would enter upon a period of unbelievable productivity and prosperity. Even more important, all international tensions would disappear. It is only when governments coerce their citizens into supporting their ambitious schemes on the international scene that conflicts arise and wars ensue.

In general, engineers are prone to be more concerned with the discovery of facts than with the discovery of the meanings of those facts as they apply to the development of mankind. My plea today is that we engineers, who are so heavily indebted to our intellectual forebears, resolve to discharge that debt by contributing to the advancement of knowledge and the establishment of the climate which permits such advancement, the climate of individual freedom.

For from freedom, we can derive peace. And with freedom and peace we can go forward to achieve life's richest spiritual and material blessings for all people, everywhere.—*Reprinted from* The Freeman, *Jan., 1957.*

Waste, Inefficiency, Confusion

Admiral Ben Moreell gained lasting fame as organizer of the Seabees. Among the important duties he has undertaken since his retirement was the chairmanship of the Second Hoover Commission Task Force on Water Resources and Power. He has now written a book on the subject, published by the Law School of the University of Chicago.

The gist of this authoritative work is thus summarized by John Chamberlain in *The Freeman:* ". . . There are so many overlapping agencies and authorities in the public water and power fields that it is impossible to find any consistent pattern or purpose in the way things are being done. Lacking coordination, government agencies compete with each other for the right to build dams and irrigation ditches. Things are always being put over under wrong names; power is subsidized in the name of navigation, reclamation is instituted in the name of flood control, etcetera, etcetera, etcetera."

Mr. Chamberlain adds that Admiral Moreell takes an exceedingly dim view of the "yardstick" theory of Federal power (as exemplified by TVA) on the grounds that "tax exemption and cheap government money make impossible a sound comparison of costs between investor-financed utilities and government projects."

Waste, inefficiency, and confusion seem to be part of every Federal venture into the electric power business. An ironic factor is that the cost of power is a minor matter to almost everyone. To quote from Mr. Chamberlain's review again, ". . . the cost of power to the average U. S. householder is about one per cent of his family budget. . . . A reduction of three per cent in the citizen's tax bill would pay for all of his power!"—*Reprinted from Industrial News Review, Portland, Ore.*

119 Safety Merit Awards Given in 1956

Edison Electric Institute Presents Record Certificates for One Year to 41 Companies for Accident-Free Operations

A RECORD 119 EEI Safety Merit Awards in 1956 were presented to 41 member companies for completing 1,000,000 or more man-hours of operation without a disabling injury accident.

Of the 24 companies receiving 38 certificates in the last four months of the year, the Northern Division of the Delaware Power & Light Co. was the only company to receive a 5,000,000 man-hour award. During the same period, the Construction and Shops Department of Consolidated Edison Co. of New York reached the 4,000,000 man-hour mark without a major accident. This record was achieved in a period of nearly seven years and is outstanding in that the personnel are normally exposed to hazard.

The tabulation shows also that the Northern Division employees of the Delaware Power & Light Co. have had accident-free operations for 1,000,000 man-hours in the last nine years.

A comparison of awards presented in the last five years is shown in the following table.

Year	Number of accidents	Total companies
1952	34	18
1953	63	34
1954	81	30
1955	97	33
1956	119	41

The Safety Merit Award was established in March, 1943, "to provide recognition of outstanding and meritorious achievement in accident-free operation by EEI member companies." Certificates are given, upon application, to electric companies and combination electric and gas companies after 1,000,000 or more accident-free man-hours have been achieved.

They are available to electric companies for records established by the entire organization, or by any division, department or other group within the company. In the case of combination companies, application may be made on behalf of the entire company where its operations predominately are electric, or the entire electric division, or any division, department or group which is primarily concerned with electric operations.

Small-Company Plan

For smaller electric and combination companies with less than 100 employees, the award may be requested after completion of 500,000 or more man-hours without accident. Here, the awards are restricted to either the entire company (where the company is primarily electric) or to the entire electric division.

Since the awards were established, 553 certificates have been presented. Of these, 471 are now outstanding for 1,000,000 man-hours (or 500,000 for smaller companies); 61 for 2,000,000; 15 for 3,000,000; three for 4,000,000; two for 5,000,000, and one for 7,000,000.

Certificates presented between Sept. 1 and Dec. 31, 1956, are listed below:

Company	Man-Hours
Alabama Power Co.	
Production Department	1,003,956
Electric Operations	2,748,533
Mobile Division	1,001,809
Western Division	2,002,163
Appalachian Electric Power Co.	
Logan District	1,000,124
Entire Company	1,115,701
Baltimore Gas and Electric Co.	
Meter & Installation Department	3,001,482
Central Power and Light Co.	
Entire Company	1,468,246
The Cleveland Electric Illuminating Co.	
Entire Company	2,575,200
Distribution Group	1,092,200
Eastern District (Department)	1,000,000
Consolidated Edison Co. of New York, Inc.	
Production Dept.—Hell Gate Station	1,000,000
Substation Operation—Substation & Gas Holder Operation Bureau	3,000,000
Station Construction & Shops—Holder Maintenance & Painting Bureau	4,000,000
Consumers Power Co.	
Saginaw Division	1,051,772
Delaware Power & Light Co.	
Meter Dept.—Northern Division	1,000,000
Northern Division	5,000,000
The Detroit Edison Co.	
Central Heating Dept.	2,003,206
Georgia Power Co.	
Atlanta Division Substation Operating Section	2,002,199
Indiana & Michigan Electric Co.	
Ft. Wayne Division	1,004,315
Interstate Power Co.	
Entire Company	1,104,613
Dubuque District	1,195,773
Jersey Central Power & Light Co.	
Sayreville Operating Station	1,025,304
Mississippi Power Co.	
Production Department	1,033,584
Oklahoma Gas & Electric Co.	
Entire Company	1,000,000
Transmission & Distribution Dept.	1,000,000
Pacific Gas & Electric Co.	
East Bay Division—Electric Dept.—Oakland, Calif.	2,194,735
Bureau of Tests & Inspection—Sayreville, Calif.	1,046,250
Pacific Power & Light Co.	
Entire Company	1,115,000
Pennsylvania Electric Co.	
Saxton Generating Station	1,000,000
Philadelphia Electric Co.	
Entire Station Operating Dept.	1,057,000
Potomac Electric Power Co.	
Meter Department	2,012,229
Southern California Edison Co.	
Redondo Beach EDS District	1,018,774
Southwestern Public Service Co.	
Entire Company	3,299,260
Panhandle Division	1,000,000
Pecos Valley Division	1,000,000
Tampa Electric Co.	
Hookers Point Station	1,003,526
Toledo Edison Co.	
Entire Company	1,015,376

Many of the 1,000,000 man-hour awards and those for 2,000,000, or 3,000,000 and over represent impressive periods of time without accident. The Atlanta Division Substation Operating Section of Georgia Power Co. has a record of more than 17 accident-free years. The Emeryville Bureau of Tests & Inspection, Pacific Gas & Electric Co., has a record of 15 years without a major accident.

Electronic Accounting Planning, Problems Discussed at EEI-AGA Seminar

Application of Computers in Utility Industry Explored at Fourth Electronics Meeting in Cincinnati

TECHNOLOGICAL advances were studied and information and ideas exchanged by representatives from all divisions of the public utility industry at the Fourth Annual Electronics Seminar, Cincinnati, Ohio, Dec. 3-5.

Sponsored jointly by the EEI Accounting Division and the AGA Accounting Section, the three-day seminar had as its theme "Electronic Accounting Planning and Problems."

The meeting was opened by R. G. Schneider, assistant treasurer of Virginia Electric and Power Co. and chairman of the EEI Accounting Division Executive Committee. Programming of the seminar was supervised by the co-chairmen, Russell W. Britt, Wisconsin Electric Power Co., and Emmet T. White, Public Service Electric and Gas Co., Newark, N. J. They presided over the general sessions.

Informal group discussions characterized the seminar, with delegates questioning speakers and panel members and citing their individual problems and experiences.

In the general session of Monday morning, Dec. 3, "New Developments in Electronic Equipment," reports were given on each of the 10 major manufacturers and the many West Coast manufacturers of electronic equipment. It was reported that General Electric Co. and Philco Corp. have entered the computer field.

Application of large-scale computers to customer accounting was the subject of the Monday afternoon general session. Panel members were: J. Breen, W. E. Eggleston, H. E. Jacobson, Commonwealth Edison Co.; F. J. Porter, Jr., Consolidated Edison Co. of New York, Inc.; J. D. Elliott, The Detroit Edison Co., and M. Salvino, The Peoples Gas Light and Coke Co.

Three cardinal "don'ts" for system men planning an application for a computer were listed by Mr. Porter—1. don't underestimate the complexity of programming; 2. don't underestimate the cost of programming, and 3—don't underestimate the time to get started.

Mr. Eggleston, describing system design problems, said: "Customers are of first consideration in the system design. In applying customer accounting as the first application to large-scale computers, we encourage greater danger in the hope of making greater savings."

Mr. Salvino warned that although there are few errors in an electronic system, each error is expensive to correct. He advised more stringent controls in the system.

Computer Training Stressed

In his discussion of personnel problems, Mr. Elliott explained the shortage of experienced help in the feasibility and study and programming areas as making most difficult the job of evaluating the quality and number of people needed and the amount of training and retraining needed. He described training as a major project in preparing for the installation of a computer. The need to train programmers who will create the electronic system and the importance of training people to operate the conversion procedure and retraining of people whose jobs are going to be eliminated was stressed by Mr. Elliott.

He suggested that programmers be recruited from within the company, advising that employees who know the present operations in the area to be converted to the computer become programmers. He added that IBM tests could help in selecting programmers because "how good a man is on his present job does not indicate he will make a good programeer."

Tuesday was devoted to group discussions of the following subjects: (1) Manual to EDPM vs. Manual to Punched Card to EDPM, (2) Feasibility Studies for Medium Size Equipment, (3) Feasibility Studies for Large Size Equipment, (4) Personnel Selection, Training, and Organization for Large and Medium Size Equipment, (5) IBM 650 Applications Other Than Billing, (6) Elements of System Design for Medium Size Equipment, (7) Elements of System Design for Large Size Equipment, and (8) Clerical, Tabulating and Customer Inquiry Organization Surrounding Large Size Equipment.

Group discussions were led by one or more of the following: L. Philipson and R. C. Young, Jr., of the American Gas and Electric Service Corp.; C. H. Carte, E. J. Jasper and W. J. Ott of The Cincinnati Gas and Electric Co.; D. C. Gillespie, W. H. Thumn, and J. E. Towle of the Columbia Gas System Service Corp.; J. Breen, W. E. Eggleston, and H. E. Jacobson of the Commonwealth Edison Co.; J. T. Hydok and F. J. Porter, Jr., of Consolidated Edison Co. of New York, Inc.; J. D. Elliott, E. D. Cowles, A. J. Gebauer, H. J. Stewart, and M. C. Vorpagel of The Detroit Edison Co.; M. Salvino of The Peoples Gas Light and Coke Co.; R. W. Britt, J. G. Cadby, and R. E. Skogg of the Wisconsin Electric Power Co.

Each group discussion was attended by 30 to 40 men. The discussion leaders answered questions from the delegates. Some of the information and ideas given in these discussions are listed here.

Each organization must make its own feasibility study.

Use of outside consultants for making the feasibility study or programming of the equipment is not recommended. Since electronic data

processing machines are new, consultants have little experience to offer. The men who are going to operate the equipment should design the system.

The variety of equipment on the market complicates the decision of which equipment is best suited for your organization.

Be sure to see an engineering prototype of the equipment today before placing your order, for too much is invested in procedures to permit frequent changes in equipment.

Medium size computers are confined to one area such as billing, collection, or payroll. Large size computers are used to make a system that crosses departmental lines.

Selection, training, and development of people who are going to design and operate the system is a major problem. People should also be selected from other departments and divisions of the organization to provide a programming staff with a broad knowledge of company operations.

Some of the qualities to look for when selecting people for training as programmers are: originality, imagination, courage, daring, perseverance, compatibility, and team work. Employees experienced in punched card tabulating equipment do not necessarily make good programmers.

A programmer's time is spent as follows: 50 per cent system design, 25 per cent preparing block diagrams, 10 per cent coding, and 15 per cent dibuging.

Do not let the regular operating force decrease during the planning stage although the feasibility study indicated that a number of people will be eliminated, for more people must be added for conversion before any work is eliminated. Don't sell the conversion job short.

During the conversion period there are three systems to operate simultaneously: the present system, the conversion system, and the electronic data processing system.

Peripheral equipment is not as error free as the computer. Validity checks can be programmed into the computer thereby practically eliminating the possibility of an undetected error in the computer.

The possibilities of variations in system design are endless, therefore, it is necessary to freeze the system somewhere and resist further changes if the system is ever to be practically installed.

"Computers in Medium Size Companies" and "Application of a Large Scale Computer to General Acccounting" were the subjects presented in a general session Wednesday morning.

Don C. Frisbee, assistant treasurer, Pacific Power and Light Co., Portland, Ore., described his company's activities in ordering and preparing for the installation of a Datatron. The original feasibility study was made by Stanford University. The results indicated a computer was not economical for its operations. But the management of the Pacific Power and Light Co. wanted a computer. A second feasibility study was made by company employees. This study indicated the break-even point would be five years from the date of conversion. On the basis of the second study a Datatron was ordered in January, 1956, for delivery in April, 1957.

Company Men Selected

Ten company men were selected through aptitude and personality tests to form the programming staff. They were given 12 weeks training in system design, two weeks in flow charting, and two weeks in programming.

From outside the company they have employed three IBM-trained people and two technically-trained people to maintain the equipment. Twelve men are being trained as operating personnel.

The programming staff is assigned as follows: a five-man team to the programming area, a six-man team to the EDPM system design, and a three-man team to planning and training for full conversion. Full operation on the computer is scheduled for 1959.

Walter J. Ott of The Cincinnati Gas and Electric Co. described the activities of the Arizona Public Service Co., Phoenix, in ordering and preparing for the installation of Univac.

J. W. Balet, Consolidated Edison Co. of New York, Inc., reported on its successful application of an IBM 705 computer. The computer time required for payroll and distribution operations is one-third of the first shift.

W. D. Sweetman closed the meeting by expressing the gratitude of the Utility industry to those members who are pioneering in the application of computers.

EEI Offers Two Sets of Data Sheets

A BOOKLET of 56 Data Sheets on residential and commercial heat pump installations and a new series of Commercial Electric Cooking Data Sheets have just been prepared by the Commercial Department of Edison Electric Institute, 420 Lexington Ave., New York.

The data sheets on heat pump installations, produced by the Electric Space Heating and Air Conditioning Committee, contains design and operating data. The following information is included: ratios of calculated heat loss to heat gain; kwhr per winter degree day per thousand Btu calculated heat loss; kwhr per winter degree day per thousand cubic feet of conditioned volume; kwhr per summer degree or degree hour per thousand Btu calculated heat gain; kwhr per summer degree day or degree hour per thousand cubic feet of conditioned volume; winter and summer load factors where ratios of supplementary resistance heating with air source heat pumps to balance points on residential and on various types of commercial installations; a useful definition of summer degree day or summer degree hours.

Forty-five of the Data Sheets are supplemented with illustrations depicting homes and commercial establishments which have installed the heat pump. The booklet is priced at $2.00 for EEI member companies and $3.00 to non-member companies and those outside the USA. Orders should be addressed to the Commercial Department at EEI headquarters.

The series of Commercial Electric Cooking Data Sheets includes 12 case studies on electric success stories of commercial electric cooking installations in restaurants, cafeterias, schools and diners. The Commercial Electric Cooking and Water Heating Committee of EEI prepared them.

Data Sheets are compiled by electric utility company personnel and highlight the ease, efficiency and economy of electric cook equipment in new and converted installations. They offer factual sales assistance in selling architects, designers, and food service operators.

This new series, Nos. 61-72, is priced at $4.00 for the first set; $1.00 for each of the next nine and 50 cents for additional sets beyond 10, when orders are sent to one address.

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Home Service Exchange Yearly subscription	1.00	1.50
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Personals

Herbert J. Scholz, president of Southern Services, Inc., has been elected board chairman of the company. **Ernest C. Gaston,** vice president and chief engineer, is the new president. Associated with The Southern Co. system for 35 years, Mr. Scholz was largely responsible for its development of an integrated production and transmission system. The new board chairman also has been active in atomic energy development work, representing The Southern Co. in its participation in Power Reactor Development Co., of which he is now a vice president. After he was graduated from Stanford University, Mr. Scholz was associated with General Electric Co. before joining the Alabama Power Co. in 1922. In 1931 he joined Commonwealth & Southern Corp. Service Co. and was named president of that company in 1947. When C&S was dissolved in 1949 to form two service companies, Mr. Scholz assumed the presidency of Southern Services Inc.

Mr Gaston became associated with the Southern Co. group about 30 years ago after his graduation from the University of Alabama.

In other executive changes, **R. H. Freese,** treasurer, was elected a director, vice president and comptroller to succeed **H. M. Tickle** who has retired. **J. M. Reynolds** is the new treasurer. **J. J. McDonough,** newly-elected president of Georgia Power Co., was elected a director and **O. E. Charlton** was appointed electrical engineer.

C. Evan Parks, assistant to the president of Iowa Southern Utilities Co., has been named a vice president of the company. He will be in charge of engineering, construction and operation. Mr. Parks joined Iowa Southern in 1955 as assistant to the executive vice president. Prior to that appointment, he had served on the engineering staff of the Public Service Co. of Indiana for more than 20 years. He started with the Indiana company shortly after receiving a degree in electrical engineering from Purdue University in 1933.

Retirement of **Ralph E. Moody,** chairman of the board, Union Electric Co., St. Louis, has been announced. Before he was elected as the first board chairman in Union Electric's history — in September, 1954—Mr. Moody was executive vice president and general manager of the company. He joined the St. Louis utility in 1941 after more than 25 years as an operating executive of utility companies in Wisconsin. He was elected a director of Union Electric in 1941 and later that year became vice president in charge of operations. He is a former member of the EEI board of directors and was chairman of EEI's Research Advisory Committee. He is a 1913 graduate of the University of Wisconsin with an electrical engineering degree. Mr. Moody's first utility job was with the Milwaukee Electric Railway and Light Co. as a maintenance man. In the 1940's he was named vice president and director of North American Co. and a director of these companies: West Kentucky Coal, Potomac Electric, and Railway & Electric (both of Washington, D. C.), Union Electric Co. of Missouri, Union Electric Co. of Illinois, Iowa Union Electric and Mississippi River Power.

L. F. Chambers who in 44 years with Northern States Power Co. advanced from construction clerk to vice president and treasurer and principal finance officer, has retired. He began his service with NSP's Mankato, Minn. division in 1912. After moving into various positions in the Mankato division, including that of accountant, he was transferred in 1919 to the general office in Minneapolis as a traveling auditor and general accountant. From 1926 to 1947, Mr. Chambers was associated with the finance and accounting department of an affiliated engineering and management company in Chicago which handled many of NSP's financial and accounting affairs. He returned to Minneapolis in 1947 when he was named vice president and treasurer of NSP. In 1954 he was appointed principal financial officer.

S. G. Page has been appointed director of personnel for the Duquesne Light Co. and subsidiary companies, succeeding the late **John M. Orr.** Mr. Page joined the company in 1924 as an apprentice engineer and subsequently was technical clerk, junior engineer, operating instructor, design engineer, superintendent of plans and schedules and technical assistant to the vice president of operations. He received a degree in electrical engineering from Iowa State College.

Former EEI President **Walter H. Sammis,** president of Ohio Edison Co., has been elected a life member of the trustees of Columbia University. Mr. Sammis succeeds the late **Thomas J. Watson, Sr.,** who was president of the board of International Business Machines Corp. He is a graduate of Columbia's School of Engineering and was an alumni trustee of the university from 1946 to 1953. He also is president of the Pennsylvania Power Co. and a director of the Ohio Valley Electric Corp. and the Cleveland and Pittsburgh Railroad.

Two organizational changes in the sales department of The Connecticut Light and Power Co. have been announced. **Quentin Q. Quinn,** industrial sales engineer at the company's Berlin headquarters, has been appointed industrial sales manager, filling a vacancy created by the death of **H. W. Memmott. Robert S. Bromage,** CL&P rate engineer, has been named assistant to the sales vice president. Mr. Quinn joined CL&P in 1928 and has served in numerous capacities with the engineering department. A graduate of the Bliss Electrical School, Washington, D. C., he is a member of the Interstate Power Club, the Illuminating Engineering Society and the Institute of Radio Engineers. Mr. Bromage was graduated from Brown University in 1936 and that same year joined the company's general accounting department at Thompsonville.

Lawrence M. Duryee at the same time was promoted to the newly-created post of western division industrial sales engineer with headquarters at Waterbury. Mr. Duryee is an engineering graduate of Stanford University. He joined CL&P in 1928 as a lighting and industrial engineer. In 1935 he was named industrial power engineer at Waterbury. He has been industrial sales engineer since 1952.

Booklet on the Atom Published by EEI

"Electric Power from the Atom," a new booklet just published by Edison Electric Institute, trade association of the electric power industry, discusses the progress of the industry's program to produce electrical power with atomic fuel.

Illustrated with maps, charts and drawings, the text deals primarily with five basic questions—how important is it, how is it made, what about its cost, when can we expect it, and also what is being done to develop it.

Name of the constructing organization, type reactor, electrical capacity, location and estimated cost of the 18 developmental atomic power plants being planned, developed or constructed as of October 1956, are listed. The data cover the 10 plants in which investor-owned power companies were participating at that time, as well as eight plants planned by other organizations.

The booklet contains the target dates for the first atomic-fueled generation of electricity on a large scale and estimates as to when it might be produced competitively with conventional fuel.

Another section is devoted to EEI's Technical Appraisal Task Force on Nuclear Power which is studying and evaluating the status of atomic reactor technology in the United States and elsewhere. The findings of this group will be made available to EEI member companies and to any other organizations interested in the development of economical atomic power.

The Preference Clause

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amount of taxes would be raised to replace this loss of government income.

The alternative to place the two on a par would be to require that public power be disposed of at a price commensurate with its value and that all power projects be required to pay their fair share towards support of government the same as other forms of production.—*Excerpt from the remarks of Charles D. Curran, consulting engineer, Washington, D. C., at the 53rd Annual Fall Meeting, Rocky Mountain Electrical League, Colorado Springs, Colo.*

First Full-Scale Celebration Planned for National Electrical Week

(*Continued from Page* 18)

committees are underway with programs in communities throughout California, Arizona, and Nevada. Similar reports have come from the Electric Club of Washington (Seattle), the Electrical League of Rhode Island, and from Boston, Kansas City, Chicago, Indianapolis—in fact, every major city in the nation.

Chairman Skinner pointed out that one of the most encouraging aspects of the Week has been the response from small communities from coast to coast—towns like Buffalo, Minn., Bowling Green, O., Elco, Ill., Iron River, Wis., Palestine, Tex., Walnut Creek, Cal., Newburgh, N. Y., and many others.

"National Electrical Week has been sponsored or endorsed by practically every major trade association associated with the electrical industry, and it is certainly apparent that we are reaching down to the grassroots everywhere with the program," Mr. Skinner said.

One of the first activities supporting NEW will be the LBE closed-circuit telecast to some 70 cities on Jan. 30.

Other activities during the period of the observance of National Electrical Week include:

Plans for NEW tie-ins on the Arlene Francis, Dave Garroway, and Steve Allen shows.

A special NBC network radio show the evening of Feb. 11 on "The Father of Modern Electric Living," sponsored by Allis-Chalmers.

Saturation NEW coverage by Westinghouse's entire eight-city television and radio network, by General Electric's Erie, Pa., and Schenectady, N. Y., stations, and by Allis-Chalmers' regional radio program.

Westinghouse has produced a special 15-minute NEW television show —on the development of the first atomic reactor and the future of this source of power—for showing in 32 key plant cities and sales headquarters cities.

Other companies reporting definite plans to salute NEW in trade paper advertising, direct mail, and with postage meter slugs include Anaconda Wire & Cable, A. B. Chance, Cavalier, Crouse-Hinds, BullDog Electric, Emerson Electric (St. Louis), Metalcraft Products, Triangle Conduit & Cable, Wiring Products, and Wiremold. More than 30 other companies have assured the NEW committee of their cooperation in national television, radio, and publication advertising, without reporting specific plans.

Whitwell Gives Tribute to the Sales Allies

(*Continued from Page* 17)

1930 now seem. I am certain that you will cherish and nurture the heritage of the basic principle of lowest possible prices per kwhr, which now are only fractions of what they were 25 years ago. Ingenuity, inventions, hard work, know-how and interdependent salesmanship will make all of these things possible in the challenging and fascinating future.

"Our Sales Allies—within and without the electric utility industry, within and without our individual companies—Bless 'Em. May you and they and our customers, the great American public, 'Live Better . . . Electrically' and prosper."

Con Edison Division

(*Continued from Page* 24)

matic units. Fifty per cent want a combination washer-dryer and are willing to pay more rent if the landlord would install it.

To help industry groups in New York make the necessary improvements and develop this vast market which exists for all these features of modern electric living, Con Edison announced the establishment of an Apartment House Division to advise in kitchen design.

This group supplements the already existing Adequate Wiring Bureau, which provides advisory service in the electric wiring field, and the Lighting Division, which helps customers plan modern lighting and select proper equipment.

EDISON ELECTRIC INSTITUTE OFFICERS AND COMMITTEES

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